Digitized by the Internet Archive
in 2026 with funding from
University of Alberta Library

https://archive.org/details/albertanaturalistv1617

PER
QH
1
.A33
60,001

CAMROSE LUTHERAN COLLEGE
LIBRARY

CAMROSE LUTHERAN COLLEGE
LIBRARY

ALBERTA NATURALIST

APR 3 1986

Volume 16, Number 1, Spring 1986.

For Reference
Not to be taken from the Library

Peregrine Falcon feeding young on eyrie site in northern Canada. Will the species ever return to nest on river cliffs in south and central Alberta? See article pages 1-3.

Photo: Edgar T. Jones

ALBERTA NATURALIST

Volume 16, Number 1, Spring 1986.

Published quarterly by the Federation of Alberta Naturalists
Box 1472, Edmonton, Alberta T5J 2N5

CONTENTS

Releases of Peregrine Falcons in Southern and Central Alberta, 1976-1985. *Dick Dekker and Gary Erickson* 1

Results of the 1985 May Species Count - Plants. *J. Derek Johnson* 4

Occurrence in Northern Alberta of Wilson's Phalarope and First Breeding Record for the N.W.T. *Harold Pankratz and Ernie Kuyt* 9

Skippers and Butterflies of the Kootenay Plains, Alberta. *Norbert G. Kondla* 11

FAN News, Announcements 15-24

Tim Myres: Recipient of the 11th Loran L. Goulden Memorial Award. *David M. Ealey* 25

M.T. Myres: Writings on Natural History . . . 27

Thomas W. Blakiston, Charles Waterton and John George Brown, and Their Interconnected Associations with Waterton Lakes National Park, Alberta. *M.T. Myres* 29

Black-legged Kittiwake in Jasper National Park, Alberta. *D.M. Connelly* 31

A Bluebird Hat Trick in Alberta. *Dave Elphinstone* 32

Naturalists' Bookshelf. Wild Hunters. *Wm. Wishart* 33

The Rare Vascular Plants of British Columbia. *Matt Fairbarns* 34

Recent Publications on the Natural History of Alberta 35

The Alberta Naturalist is published quarterly by the Federation of Alberta Naturalists. Special issues may be published from time to time. Any material printed for the first time in the AN may be reproduced without permission; credit lines will be appreciated. All opinions expressed are those of the authors concerned and, except where stated, do not represent official F.A.N. policy.

ADVICE TO CONTRIBUTORS

Items for publication should be addressed to the Editor at the address below. Deadlines for submission of material for regular issues are: February 1, May 1, August 1, and November 1. All material submitted for publication must be typed, double-spaced, preferably on 8½"x11" paper. Maps, charts, and graphs should be submitted in "camera-ready" form if possible. Photographs accompanying an article should be submitted in the form of black and white prints on glossy paper. (Prints can be made from supplied colour slides or negatives if necessary.) Illustrative material will be returned on request. The author's name and a complete mailing address must be provided with the submission of material. Contributors should be aware that articles of a technical nature and those involving the sightings of rare species, range extensions, out of season records, etc. may be sent out for peer review. A complimentary copy of the issue in which a submission appears will be sent to authors. Information on advertising rates may be obtained from the Editor at the FAN Box No.

DEADLINES for FAN project reports are: *Alberta Christmas Bird Counts,* January 30, Andrew Slater, 22 Hillgrove Dr. S.W., Calgary, AB. T2V 3L6; *May Species Count - Plants,* July 15, J. Derek Johnson, Northern Forestry Centre, 5320 - 122 St., Edmonton, AB. T6H 3S5; *May Species Count - Birds and Mammals,* July 15, Al Wiseley, 202 - 635 - 56 Ave. S.W., Calgary, AB. T2V 0G9. Compiler cooperation is greatly appreciated.

Editor: Derek Johnson,
7109 - 106 St., Edmonton, Alberta T6E 4V5.
Telephones: 436-8231 home, 435-7306 work.
Assistant Editor: David M. Ealey
Photo Editor: Dick Dekker
Typesetting: Typeplus Typographers Ltd.
Graphic Design and assembly: Dick Dekker
Printing: Europe Offset Ltd.

The costs of printing the Alberta Naturalist are partially supported by grant funds through the Periodical Publication Assistance program of Alberta Culture. The Federation of Alberta Naturalists gratefully acknowledges this support.

ISSN 0318-5440. Postage paid at Edmonton, Alberta under Second Class Mail Registration No. 3604.

Releases of Peregrine Falcons in southern and central Alberta, 1976-1985

Is their apparent failure to reoccupy rural nesting habitat tied to prey declines?

Dick Dekker and Gary Erickson

Peregrine Falcons formerly nested on cliffs overlooking the North and South Saskatchewan drainage systems (Salt and Salt 1976), but became locally extirpated by 1967 (Dekker 1967) with the odd pair hanging on until 1974 (Fyfe *et al.* 1976).

In the hope of re-establishing the species in southern and central Alberta, the Canadian Wildlife Service and the Alberta Fish and Wildlife Division began releasing captive-bred Peregrines at hack-sites along rivers and in the city of Edmonton in 1976. Since 1982, some of these falcons have nested successfully in Edmonton and Calgary. However, thusfar the species has failed to reoccupy former nesting habitat along rivers and creeks in south-central Alberta.

This paper presents data on the numbers of captive-bred Peregrines released up to 1985, and it examines the hypothesis that a reduction in food base may have inhibited these falcons from nesting in rural Alberta.

Releases and Returns

A total of 163 Peregrines were released in southern and central Alberta from 1976 to 1985, including 87 hacked from natural cliff sites, 51 hacked from buildings in Edmonton and Black Diamond, 8 to augment productivity of Peregrine pairs nesting in Edmonton and Calgary, and 17 cross-fostered to Prairie Falcons (Table 1).

All released falcons were fitted with a U.S. Fish and Wildlife aluminum legband and a coloured band imprinted with white alpha-numeric symbols, readable through a telescope at about 100 m under good conditions.

Information provided by two band recoveries indicates that these Peregrines migrated in fall to wintering quarters in Central and South America. Positively identified by band numbers, 14 falcons are known to have returned to Alberta in the spring following their release.

Falcons that showed up in Alberta cities in the years following their release originated from urban hack-sites with two exceptions. A female Peregrine that had been released at a cliff site on the Red Deer River in 1981, nested in Calgary in 1983-85, and a male released at Rosebud in 1982 nested in Edmonton in 1985. In an opposite case, a female Peregrine released in Edmonton city showed up on a nesting cliff on Lake Athabasca in northern Alberta. However, thusfar not a single released Peregrine has been known to nest on natural sites along the North and South Saskatchewan River systems.

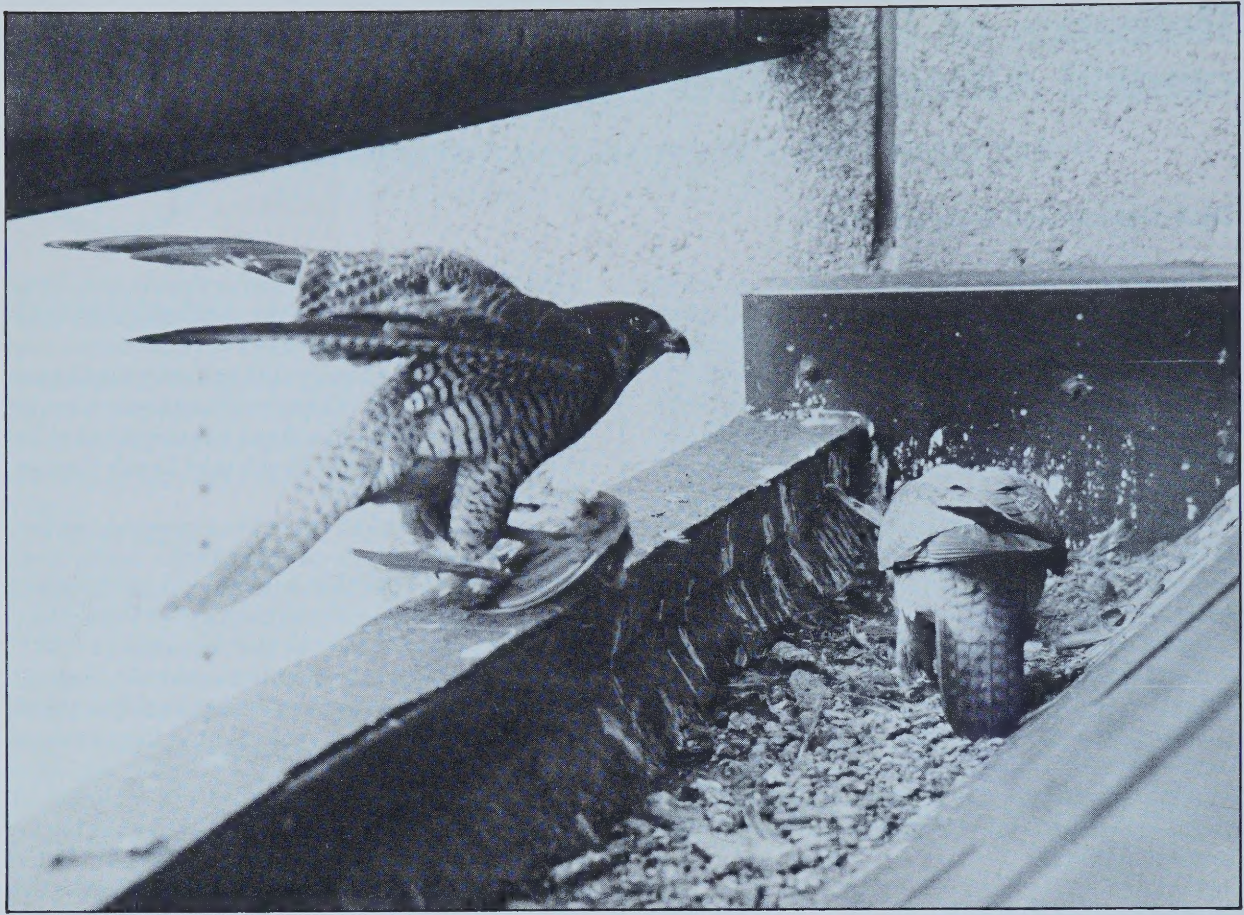
To our knowledge, there have been no reports of Peregrines, adults or immatures, using river cliffs in central Alberta as a summer base, but there are a few sightings of colour-banded Peregrines from Beaverhill Lake. In the summer of 1977, following releases on the river near Ft. Saskatchewan, one or two juvenile Peregrines, that showed no fear of humans, were sighted frequently at the lake. A very "tame" male Peregrine was seen hunting shorebirds throughout the summer of 1978. In the same year, an immature female falcon frequented the area from May to August. Since 1979, no Peregrines have summered at Beaverhill Lake, although migrating falcons are recorded from late April to early June, and from early September to early October (Dekker 1984).

Three male Peregrines released in Kananaskis Country were sighted there during the following spring, but they are not known to have nested. There are no historical nesting records of Peregrine Falcons from Kananaskis Country, and further releases of captive-raised falcons are not planned for the area.

Prey Declines

The release of Peregrines in south-central Alberta could be continued for some time. The re-establishment of a rural breeding population remains a possibility, providing there is a reduction in toxic chemical residues on the Peregrine's wintering ranges, and assuming that the prey base for Peregrines in central Alberta has remained adequate. However, the latter is a matter of concern because of the following developments.

1. Large-scale destruction of wetland habitat accompanied by serious and well-documented declines in duck numbers.



Pair of captive-bred Peregrines on nest ledge on AGT building in Edmonton. Edmonton Journal Photo.

2. Changes in farming practices, including the use of herbicides, resulting in a reduction in habitat for upland birds, such as Grey Partridge; abandonment of stooking of grain crops and the replacement of wooden field granaries with steel bins, eliminating spilled grain as a winter food source for upland birds and feral pigeons.
3. Acreage reductions of native grasslands and pasture causing suspected declines of small passerines.

Prey declines have been implicated as a limiting factor in the breeding and distribution of Peregrines and other bird-hunting falcons in various parts of the world. Shortage of medium-sized prey species was linked to poor production of young in Peregrines in North Africa (Thiollay 1982). In South Africa scarcity of vulnerable prey was believed to be the factor explaining the absence of Peregrines in areas where Lanner Falcons, which are more generalized feeders, reproduced successfully (Tarboten 1984). Nelson (1969) suggested that the near-disappearance of breeding Peregrines from the northwestern United States during the first half of this century was linked to prey declines following a drying trend in the climate. Breeding Peregrines in the Okanagan Lake area of British Columbia vanished during the early 1900's, while Prairie Falcons took over the nesting cliffs (Allan Brooks in Nelson 1969). Prairie Falcons are less dependent upon avian prey and often feed their young on ground squirrels. When Peregrines became extirpated along the Red Deer River in Alberta in the 1960's Prairie Falcons expanded their population (Dekker 1967).

Habitat changes causing a reduction in the number of small passerines were correlated with reduced breeding success of Merlins in the Hanna district of Alberta (Hodson 1976). In some rural areas, such as around Beaverhill Lake, Merlins have disappeared as breeding birds (Dekker, unpubl. data), while the species has multiplied in cities such as Edmonton (Smith 1978) and Saskatoon (Oliphant 1974), probably as a response to availability of prey.

A preference for urban nesting habitat appears to be characteristic of the Peregrines released in central Alberta. In seems probable that the Peregrines are attracted to the city by the availability of prey species such as feral pigeons.

Former Peregrine Densities

There is no evidence that the historic nesting density of Peregrines in continental North America was high. Known eyrie sites numbered 48 in southern and central Alberta, and less than 100 in all of Canada outside coastal British Columbia and south of the arctic (Fyfe *et al.* 1976). This is a very low density compared to other regions of the world. For instance, Fenno-Scandia had a pre-1940 population of 2000-3500 pairs. Australia still has 4500 pairs. And the present-day totals of Great Britain and Ireland are 1100 pairs, which exceeds the historic population of all of the United States and Mexico (Fyfe *et al.* 1976, and data presented during the 1985 International Peregrine Symposium at Sacramento, California).

Prior to the 1960's, the Canadian prairie provinces had only a few pockets of good Peregrine breeding habitat, mainly along Alberta sections of the South and North Saskatchewan River systems. Have recent habitat changes brought about by agriculture pushed prey populations in these areas below a threshold at which Peregrines can survive as breeding birds?

Table 1. Number of captive-bred Peregrines released in Alberta and locations of release, 1976-1985.

Location	No. of Peregrines
Hack-sites on buildings	
Edmonton 1976-81	34
Black Diamond 1976-78	17
Hack-sites on river cliffs	
Ardley 1981-85	19
Rosebud 1982-83	11
Fort Saskatchewan 1976-77	8
Kananaskis 1979-82	49
Cross-fostered to Prairie Falcons	
Oldman River 1978	3
Ardley 1982-83	8
Rosebud 1984-85	6
Fostered to reintroduced Peregrines	
Edmonton 1981-82	5
Calgary 1983-84	3
Total	**163**

Literature Cited

Dekker, D. 1967. Disappearance of the Peregrine Falcon as a breeding bird of a river valley in central Alberta. Blue Jay 25:175-176.

Dekker, D. 1984. Spring and fall migration of Peregrine Falcons in central Alberta 1979-1983 with comparisons to 1969-1978. Raptor Research 18:92-97.

Fyfe, R.W., S.A. Temple, and T.J. Cade. 1976. The 1975 North American Peregrine Falcon survey. Can. Field-Nat. 90:228-273.

Hodson, K. 1976. Some aspects of the nesting ecology of Richardson's Merlin on the Canadian prairies. M.S. Thesis, University of B.C.

Nelson, M.W. 1969. The status of the Peregrine Falcon in the northwest. Pages 61-72 In: Peregrine Falcon populations. Ed. J.J. Hickey. The University of Wisconsin Press. 596 pp.

Oliphant, L.W. 1974. Merlins, the Saskatoon falcons. Blue Jay 23:140-147.

Salt, W.R. and J.R. Salt. 1976. The birds of Alberta. Hurtig Publishers, Edmonton. 498 pp.

Smith, A.R. 1978. The Merlins of Edmonton. Alberta Naturalist 8:188-191.

Tarboten, W. 1984. Behavior of the African Peregrine during incubation. Raptor Research 18:131-136.

Thiollay, J.M. 1982. Les resources alimentaires, facteur limitant la reproduction d'une population insulaire de Faucons Pelerins, *Falco peregrinus brookei*. Alauda 50:16-44.

Authors' Address:
1. 3819-112 A Street, Edmonton, Alberta T6J 1K4.

2. Alberta Fish and Wildlife Division, Main Floor, North Tower, Petroleum Plaza, 9945-108 Street, Edmonton, Alberta
T5K 2C9.

Gary Erickson places captive-bred Peregrine chicks in nest, while the foster parent flies by.

Edmonton Journal Photo.

Results of the 1985 May Species Count - Plants

J. Derek Johnson

The following is a summary of the results of the botanical portion of the 1985 May Species Count, held May 25-26. This year marked the tenth consecutive year for the count. Also included are observations from the F.A.N. Spring Meeting held in Lethbridge May 18-20, including the field trip on May 19 to the Fort Whoop-Up Historic Site and the Milk River Ridge Reservoir. The method of reporting continues that adopted last year (Johnson 1985).

The areas from which reports were received have been listed in approximate latitudinal order from south to north. Twenty-two reports covering 14 areas were received from the 1985 count. A total of 38 participants reported 268 species in flower. If incidental observations by the author, S. Zoltai and B. Robson from Writing-on-Stone Provincial Park, Pakowki Lake, the South Saskatchewan River at Highway 41, the Red Deer River at Empress, Gooseberry Lake Provincial Park, Nojack, Rat Creek, Wolf Creek, Calling Lake, Slave Lake, Highway 34 north of Valleyview and McLennan, covering the period from May 21-30, are included, the total rises to 285. The number of species reported in flower is the third highest total over the last ten years, but the number of participants is only four short of the record low of 34 set in 1982.

Several people felt that the spring of 1985 was early, but after successive late springs from 1982-84, it only seemed that way. In actual fact, the spring of 1985 was about average or perhaps a day or two early. In many areas of the province it was as much a case of finding more *plants* in flower as more species. Weather conditions on the count weekend were mixed. Saturday was rainy and wet in many areas, but Sunday showed a general improvement.

The list of spring-flowering plants in Alberta continues to grow. Species reported in 1985 which had not been reported on previous counts include: *Eriophorum gracile* (Slender Cotton-grass) from Slave Lake, *Listera cordata* (Heart-leaved Twayblade) and *Polygonum convolvulus* (Wild Buckwheat) from Edmonton, *Myosurus minimus* (Least Mousetail) from Dry Island Buffalo Jump Provincial Park, *Cardaria draba* (Heart-podded Hoary Cress), *Sisymbrium altissimum* (Tumbling Mustard) and *Senecio integerrimus* (Entire-leaved Groundsel) from Lethbridge, *Plagiobothrys scouleri* (Scouler's Allocarya) from Pakowki Lake, *Hyoscyamus niger* (Black Henbane) from Calgary, and *Erigeron pumilus* (Hairy Daisy) from the South Saskatchewan River at Highway 41. Specimens were collected for a number of these records; photographs were provided for others.

The Calgary report of Black Henbane comes from the Inglewood Bird Sanctuary. The author observed this species at the Cominco Natural Area in Calgary in 1971. It would appear that it has persisted along the Bow River in southeast Calgary for at least 14 years. It is not a common species in the province. *Alyssum desertorum* (Yellow Alyssum) was reported for the first time in 1984 from the Calgary area and noted as being rare. It is either not so rare or is spreading rapidly as the author encountered this species at three locations in 1985: Lethbridge, the South Saskatchewan River at Highway 41, and the Red Deer River at Empress. The report of Least Mousetail from Dry Island Buffalo Jump Provincial Park is particularly interesting for a number of reasons. Not only is it a new record for the May Count, but it is an uncommonly-encountered species in the province at any time. Its occurrence at Dry Island also represents a slight northward extension of the range shown in Moss (1983) for the species.

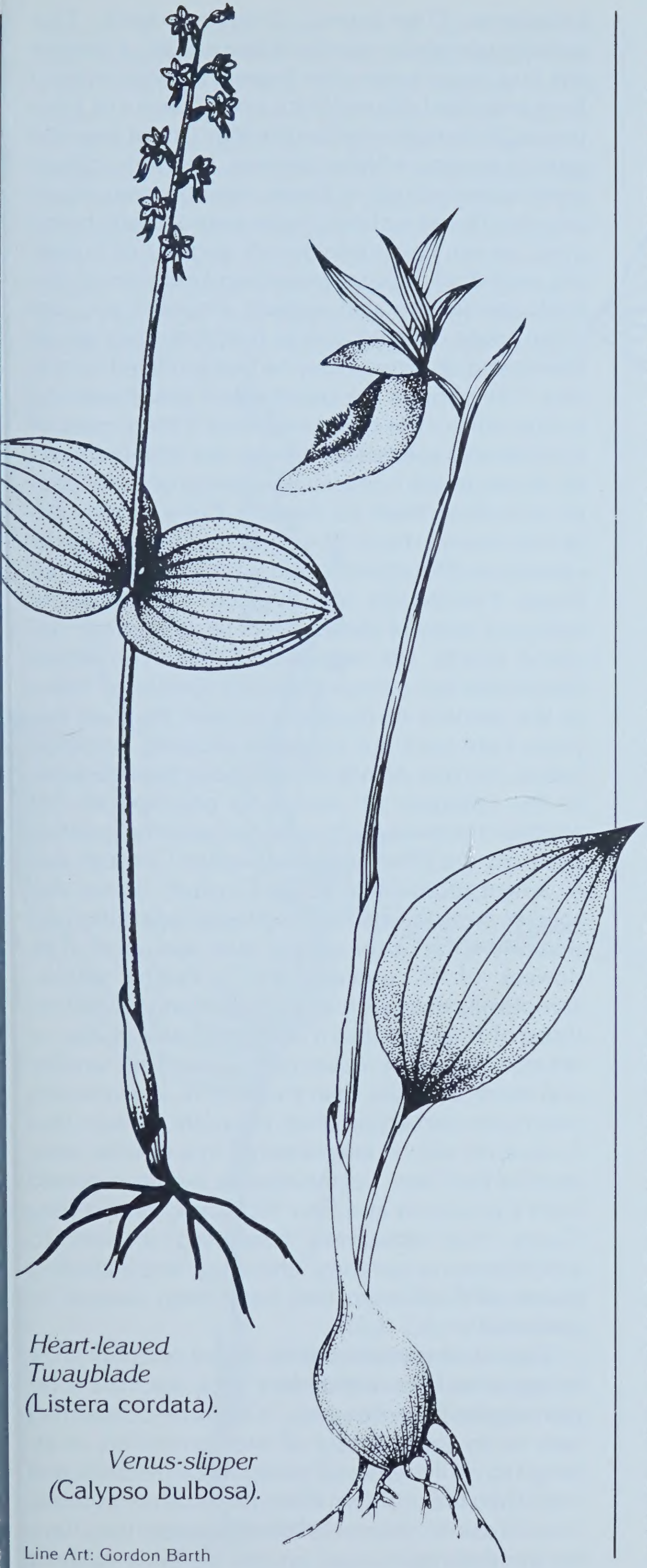
A number of observers (including the author) made reference to the fact that they could not remember a year when Prairie Onion (*Allium textile*) was so abundant and conspicuous across southern Alberta. Some meadows and slopes looked like a solid carpet of white flowers. On a more negative incidental note, Blue-eyed Grass (*Sisyrinchium montanum*) has been reported in flower on only one count over the last two years after eight consecutive years of being reported on two or more counts. It is decreasing in abundance? A few flowering plants of Venus-slipper (*Calypso bulbosa*) were found at the Wagner Natural Area west of Edmonton on the 1985 count. This brings to 15 the number of orchid species known from the vicinity.

A total of 29 species was reported in flower in the mustard family (Cruciferae). This is more than in any other previous year and our dedicated weed-watchers deserve some credit for finding some new and unusual species. Twenty-three species of *Carex* were recorded in flower in 1985, again a record high for the group. Nine species of buttercups (*Ranunculus*) and eleven species of milk-vetch (*Astragalus*) were reported, also record highs. Participants must be getting serious about their identifications!

As 1985 represents the tenth consecutive year of the count, a summary of the decade may be in order. Table I summarizes the number of participants and total number of species in flower for each year during the period. Table II presents the high, low and average number of species reported in flower for major count areas over the ten-year period. All numbers have been adjusted to follow the revised Second Edition of the *Flora of Alberta* (Moss 1983) and current reporting methods.

Trying to draw meaningful conclusions from this information is difficult, if not pointless, for a number of reasons. The record low counts for many of these areas are the result of single observer reports, sometimes combined with inclement weather. On the other hand, record high counts are often the result of good observer turnout combined with good weather. The number of species reported in flower bears more directly to these factors than to the earliness or lateness of the spring. Looking at the results, it would appear that 1981 had the earliest spring during the ten-year period, if the number of species reported in flower is used as the sole criterion to determine this. In actual fact 1980 had the earliest spring during the period, but 26 more participants on the count in 1981 than in 1980 biased the results toward the latter. On the low side, 1979 and 1982 appear to have had the latest springs over the ten-year period. This in fact was the case, but weather records point to 1979 as having the latest spring. This is obscured somewhat by the fact that 1½ times as many people participated in the 1979 count as did in the 1982 count. Averages have little meaning because of the year to year vagaries of the count; they are presented mostly for interest sake. About all that can conclusively be said about them is that if you want the best chance to see the greatest number of species in flower, regardless of the kind of year, go to Yamnuska.

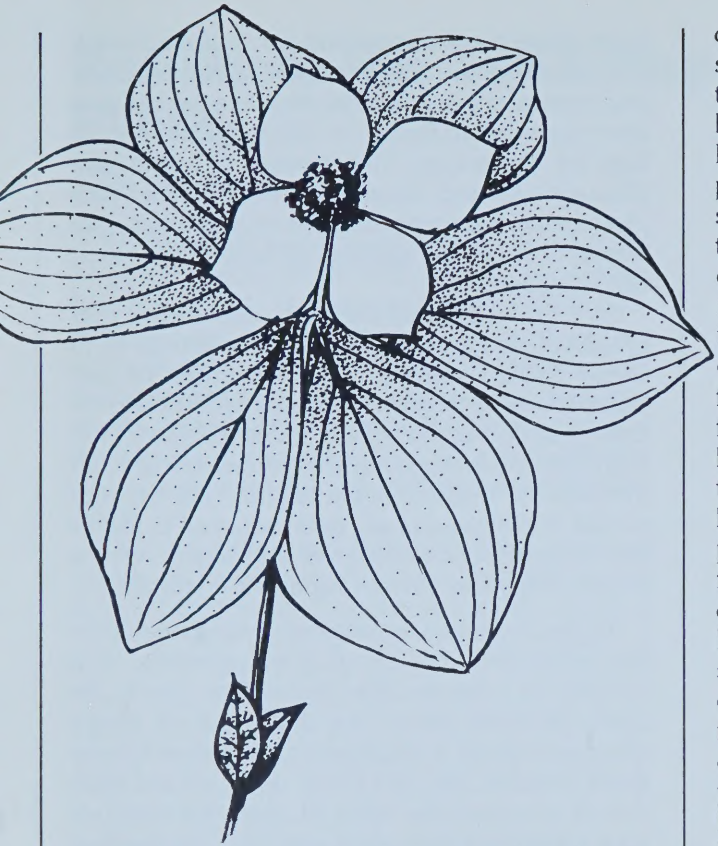
I continue to find it a challenge to sift through the results of the May plant count. Each and every year there are reports which stretch the bounds of credibility, in terms of the identity of the species



Heart-leaved Twayblade (Listera cordata).

Venus-slipper (Calypso bulbosa).

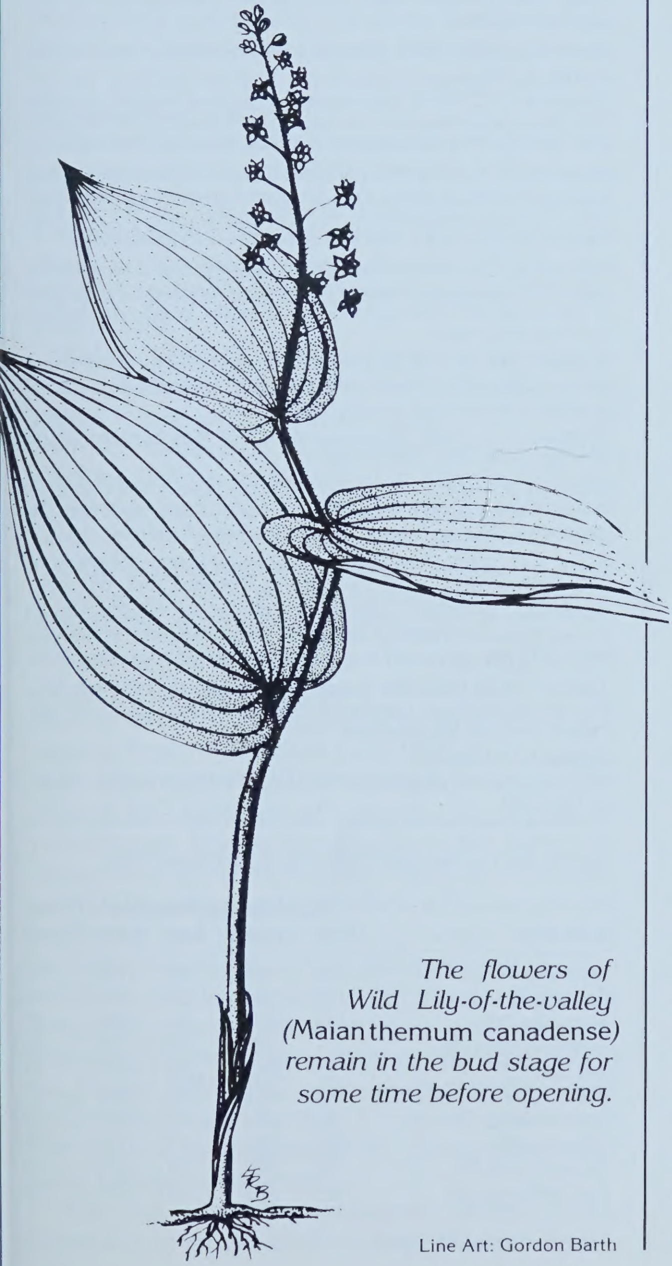
Line Art: Gordon Barth



*Four white bracts, rather than the actual flowers themselves, are the most conspicuous parts of Bunchberry (*Cornus canadensis*) at the flowering stage.*

involved, whether or not a particular species actually grows in that area, and last but not least, whether or not a particular species could actually be in flower in that location on that date. In general I have been fairly lenient in my approach to suspect records, but undoubtedly there remain a number of reports in the annual listing that are open to question. Some problems are easy to solve, either because of personal familiarity with the area involved, or knowing which species could easily be confused for another. Others are not so easy to resolve and if I have not been able to answer questions to my own satisfaction I have tended to delete the record, pending future evidence to the contrary. The most frequently encountered problem is determining whether or not a species is actually in flower. Flowering, for the purposes of the plant count, is interpreted as meaning the opening of the petals and/or sepals to reveal the stamens and/or pistils. The shedding of pollen is also a good indicator of flowering. One species which seems to be causing a particular problem is *Maianthemum canadense* (Two-leaved Solomon's-seal). This species spends a considerable amount of time in the bud stage before the flowers actually open. I have searched diligently for open flowers of Two-leaved Solomon's-seal on the May Count over the past four years, without success, but many others seem to be finding it in flower. Are observers reporting it in flower without the flowers actually being *open*, or am I just unlucky? A number of flowering records of *Populus* (poplar) and *Petasites* (colt's-foot) species are also suspect. *Petasites* spp. are often more conspicuous in fruit than they are in flower and observers may be being misled by this fact. The poplars are usually well past flowering by the time of the count weekend. Often, most of the *Petasites* species are as well, but observers can be drawn to the conspicuous heads of fluffy pappi, mistaking them for flowers. For a slightly different reason, many flowering records of *Cornus canadensis* (Bunchberry) and *Castilleja miniata* (Red Indian Paintbrush) are suspect. The first conspicuous parts of these plants to appear are coloured *bracts*, not sepals or petals. The actual flowers are less conspicuous and open later. Many of the records of Bunchberry over the past few years I am sure are of plants showing coloured bracts, but that do not actually have open flowers. In the category of confusing one species for another, the two which seem to cause the greatest difficulty are *Ribes aureum* (Golden Currant) and *R. americanum* (Wild Black Currant). These two species are quite distinct and easily separable, particularly if the observed has ever seen both. The flowers of *R. aureum* are a bright yellow, sometimes even with a touch of orange, whereas those of *R. americanum* are a very pale yellow or cream colour. The leaves of *R. aureum* are smaller and more rounded than those of *R. americanum* which are coarsely toothed. It is quite unlikely that *R. aureum* will be encountered in a natural state north of Red Deer, yet this species is often reported from Edmonton and Fort McMurray on the May Count. Are observers confusing it with *R. americanum* or are they "cheating" and including plants of *R. aureum* that have been planted in gardens?

The list of species that could not possibly grow in the areas from which they were reported is far too lengthy to go into here. It is a time-consuming task to try and contact all area compilers to attempt to verify/refute all questionable records, and even then the problem often remains unresolved. I would ask all observers that if they feel they have an interesting/unusual and/or possibly suspect record to please send me a specimen or photograph of it. After all, that is supposedly what I am here for - to help. One final musing in this regard; currently there are only three regular observers who attempt to put species names to sedges and willows. Admittedly, these are perhaps the two most intimidating plant groups to the amateur, I certainly thought so when I started, and they can be most difficult to identify in immature stages, but many of you do your counts in the same area year after year and a number of species in these groups can be recognized almost as much by their habitat as anything else. Again I offer my services to any of you who wish to further your knowledge of these groups. I have included a brief reference list with this report of publications that would be of help in dealing with these troublesome groups. Some of these are rather technical in nature, but do include good quality illustrations.



*The flowers of Wild Lily-of-the-valley (*Maianthemum canadense*) remain in the bud stage for some time before opening.*

Line Art: Gordon Barth

Following is a list of observers, totals (1984 in brackets), and other pertinent remarks for each area.

1. Cypress Hills: Margaret and Anton Walker reported 58 (49) species in flower from this area in southeastern Alberta. One interesting record was that of *Ellisia nyctelea* (Waterpod). This is not a commonly-encountered species, but it was reported from two areas on the 1985 count.

2. Lethbridge: The F.A.N. Spring Meeting field trips covering the Oldman River valley in the vicinity of the Nature Centre, the Fort Whoop-Up Historic Site along the St. Mary River, and the Milk River Ridge Reservoir yielded a total of 80 species in flower. Dave Ealey, Helen Harris, Sylvia L'Hirondelle, Derek Johnson, Chris Pielou, and Don Stiles supplied observations. When combined with a report from the same weekend submitted by Liz Hall covering the Lethbridge Community College (22 species), Riverine Park (19 species), and Gwatkins Bottom (43 species), the grand total for the Lethbridge area was 84 species. This is the highest total ever for the area, well surpassing the previous high of 68 species in 1977. It was also the highest total recorded from any area of the province. Unlike the past few years when a few lingering flowers could be found, species such as *Fritillaria pudica* (Yellow-bell), *Anemone patens* (Crocus Anemone), *Besseya wyomingensis* (Kitten-tails), and *Townsendia exscapa* (Low Townsendia) were all past flowering in the Lethbridge area by the date of the count weekend.

3. Calgary: Seven reports were submitted by ambitious counters in the Calgary area. Joyce Goldsmith and Estelle Kethler reported 14 species from Okotoks. Ena Spalding listed 41, 47 and 46 species in flower from Edworthy Park, Sandy Beach, and Fish Creek Provincial Park, respectively, a notable improvement over 1984 totals. Beryl Hallworth and Des Allen recorded 33 species on the University Prairie. Don Stiles reported 23 species from the Inglewood Bird Sanctuary and 14 species from his bluebird trail east of Didsbury. The combined total of species in flower for the Calgary area was 75 (58).

4. Yamnuska: Considering that spring's arrival was about average, the number of species reported in flower from this area is less than would have been expected. Little improvement over 1983 or 1984 totals was evident. Diane and Mike McIvor, Bunty Nelson, and Bob and Mary Smith listed 76 (63) species in flowers.

5. Banff-Canmore: This area, which usually records fewer species, had the same number of species in flower this year as Yamnuska, 76 (56). Observations were made by Joyce and Keith Cole, Diane and Mike McIvor, and Bob and Mary Smith. As in 1983 and 1984, the area surveyed included Wind Ridge.

6. Dry Island Buffalo Jump Provincial Park: Fifty-eight species were listed in flower from the area by Jim Posey. The most interesting records were *Myosurus* *minimus* (Least Mousetail) and *Ellisia nyctelea* (Waterpod). Photographs of both were provided with the report. The report of *Potentilla gracilis* (Graceful Cinquefoil), if correct, represents an unusually early flowering date for the species.

7. Red Deer: Helen Harris *et al.* submitted a list of 43 (30) species in flower from Grassy Lake, just west of Pine Lake, southeast of Red Deer.

8. Big Knife Provincial Park: Derek Johnson recorded 45 species in flower on a visit to this area on May 23. The areas covered included riverine forest and a south-facing prairie slope above the Battle River. *Achillea millefolium* (Common Yarrow) was found in flower at the latter site. This came as a bit of a surprise as it is almost three weeks ahead of the average flowering date for the species in the area (Bird 1982.).

9. Buffalo Lake: Fifty-six (46) species were found in flower by C.D. Bird, Max Capen and D. Carlyle on the annual survey of the Bird farm and the Buffalo Lake Narrows area.

10. Drayton Valley: A total of 64 (51) species was seen in flower in the area surrounding Hoople Lake, 33 km N of Drayton Valley, by Derek Johnson and Steve Zoltai. This is the second highest total recorded in the seven years that this area has been surveyed. A number of species were first records for the area.

11. Edmonton: Two reports were received from the Edmonton area. The report from Westlock has also been included with the Edmonton tally. (*Chrysosplenium iowense* (Golden Saxifrage) was the only species recorded from the Westlock area that was not also found in the Edmonton area.) Patsy Cotterill reported 46 species in flower from Terwillegar Park and Patricia Ravine. Patsy Cotterill, Alice Hendry and Liz Stinson listed 59 (47) species in flower from the Wagner Natural Area just west of the city. Jim Lange's report from the Lange family farm northwest of Westlock included 25 (29) species in flower. Including incidental observations by the author, the grand total for the Edmonton area was 83 (96) species in flower.

12. Grande Prairie: Fifty-three (36) species were recorded in flower in the Wembley-Grande Prairie area by Gavin and Ellen Craig. The Grande Prairie report is surprising in that a number of species were recorded as being in flower that were not close to that stage in most other areas of the province. This includes: *Geum aleppicum* (Yellow Avens), *Rubus idaeus* (Wild Red Raspberry), *Pyrola asarifolia* (Pink Wintergreen), and *Linnaea borealis* (Twin-flower).

13. Fort McMurray: Marion Horrocks, Pat Keeler, Jean McGill, Lorna Rempel, and Lydia Zingle observed 66 (51) species in flower. This is the best count for the area since 1981.

A complete listing of count results is available without charge from the Curator of Botany, Provincial Museum of Alberta, 12845-102 Ave., Edmonton, Alberta T5N 0M6.

The 1986 count will be held on the weekend of 24-25 May.

Literature Cited and Suggested References

Argus, G.W. 1973. *The Genus Salix in Alaska and the Yukon.* National Museums of Canada, Publications in Botany No. 2, Ottawa, Ont. 279 pp. - keys, descriptions, photographs of herbarium mounts.

Bird, C.D. 1982. 1981 Alberta flowering dates. Alta. Nat. 12, Suppl. 1: 33.

Brayshaw, T.C. 1976. *Catkin Bearing Plants of British Columbia.* B.C. Provincial Museum, Occas. Paper Series No. 18, Victoria, B.C. 169 pp. - well illustrated, but the willow key is confusing.

Hermann, F.J. 1970. *Manual of the Carices of the Rocky Mountains and Colorado Basin.* U.S. Dept. of Agriculture, Forest Service, Agriculture Handbook No. 374, Washington, D.C. 397 pp. - technical, but good key and generally well illustrated.

Hitchcock, C.L., A. Cronquist, M. Ownbey, and J.W. Thompson. 1977. *Vascular Plants of the Pacific Northwest.* Parts I and II. University of Washington Press, Seattle, Wash. - technical, but well illustrated.

Hudson, J.H. 1977. *Carex in Saskatchewan.* Bison Publishing House, Saskatoon, Sask. 193 pp. - key, descriptions, photographs of herbarium mounts.

Johnson, J.D. 1985. Results of the 1984 May Species Count - plants. Alta. Nat. 15(1): 5-8.

Looman, J. and K.F. Best. 1979. *Budd's Flora of the Canadian Prairie Provinces.* Res. Branch, Agri. Can., Publ. No. 1666, Ottawa, Ont. 863 pp. - good vegetative key to willows.

Moss, E.H. 1983. *Flora of Alberta.* Second Edition. Revised by J.G. Packer. Univ. of Toronto Press, Toronto, Ont. 667 pp.

Robertson, A. 1984. *Carex of Newfoundland.* Newfoundland Forest Research Centre, Canadian Forestry Service, St. John's, Nfld. 252 pp. - pictured key and generally good illustrations.

Taylor, T.M.C. 1983. *The Sedge Family of British Columbia.* B.C. Provincial Museum, Handbook No. 43, Victoria, B.C. 375 pp. - good key and illustrations.

Author's Address:
Northern Forestry Centre, 5320-122 Street, Edmonton, Alberta T6H 3S5.

Table I. May Species Count - Plants: Ten Year Summary (1976-85).

Year	No. of Participants	No. of Species in Flower
1976	N.A.[1]	254
1977	52	288
1978	75	265
1979	51	164
1980	42	276
1981	68	308
1982	34	192
1983	77	244
1984	46	220
1985	38	285
	Average 54	Average 249

[1] Information not available.

Table II. Ten Year Summary (1976-85) for Major Count Areas.

	No. of Species Reported in Flower				
Area (n[1])	High	(year)	Low	(year)	Average
Lethbridge (7)	84	1985	38	1982	57
Calgary (10)	118	1981	21	1982	63
Yamnuska (10)	118	1977	51	1982	83
Banff-Canmore (10)	77	1980	42	1982	60
Red Deer (7)	73	1983	29	1977	47
Buffalo Lake-Stettler (10)	115	1978	46	1984	63
Drayton Valley (7)	73	1981	27	1979	53
Edmonton (9)	117	1981	27	1979	77
Grande Prairie (9)	88	1981	29	1979	49
Fort McMurray (10)	105	1977	46	1983	75

[1] Number of reporting years.

Occurrence in Northern Alberta of Wilson's Phalarope and First Breeding Record for the N.W.T.

Harold Pankratz and Ernie Kuyt

Wilson's Phalarope, the largest of the three phalarope species occurring in Canada, is a common spring and summer inhabitant of prairie wetlands. Although recent records appear to indicate the species is extending its range northward it is not clear whether this is a true extension or merely an artifact of the increased human observer population in the north.

Richard King, surgeon-naturalist with Back's expedition to the mouth of the Great Fish River (now called Back River) in the Northwest Territories, claims to have collected Wilson's Phalarope at the tree line near Artillery Lake (Preble 1908) but the location seems too far to the northeast for this prairie bird.

Soper (1942) did not observe any phalaropes in Wood Buffalo National Park (WBNP) during his faunal investigations between June 1932 and May 1934 which covered 12,800 km of park travelling. Godfrey (1966) indicated that in Alberta, Wilson's Phalarope had been recorded without evidence of nesting as far north as Lake Athabasca, and Hohn (1973), describing the Wilson's Phalarope as a rare summer visitor in the Peace-Athabasca delta, indicated its possible breeding there.

Erskine (1968) saw four Wilson's Phalaropes about 20 km north of Lesser Slave Lake. The behaviour of the birds suggested a nest or brood was nearby. Erskine and Davidson (1976) in an Addendum recorded Wilson's Phalarope from the Fort Nelson, B.C. lowlands without providing additional information. During bird studies in the Syncrude lease north of Ft. McMurray, Sharp and Richardson (1976) saw up to eight Wilson's Phalaropes and indicated the presence of a "small breeding population on the Syncrude site during 1975." The authors considered this an "extralimital northerly breeding record." An adult male and female in breeding plumage were observed by Kuyt (1974) on 3 June, 1973 (also a female in the same spot on 8 June) near the N.W.T. border in northern Alberta and he suggested the phalaropes might have nested in the area.

The American Ornithologists' Union (1983) checklist records non-breeding Wilson's Phalaropes from central Mackenzie and central Alaska but no further details are provided. Wiseley and Tull (1977) reported the species (no figures given) from Red-neck Slough (61°34'N, 120°58'W) near Fort Simpson, N.W.T.

The breeding range in Alberta extends north as far as Bear Lake near Grande Prairie (Godfrey 1966) but more recently, Salt and Salt (1976) report Wilson's Phalarope nesting fairly commonly at Hay Lake and Zama Lake, 140 km south of the Alberta-N.W.T. border. Tull (1975) saw four of these phalaropes on 15 June 1974 about 70 km northeast of the above location.

Since 1977, Pankratz has observed Wilson's Phalarope in increasing numbers near Fort Smith, N.W.T. He saw six birds in 1977 in the Fox Holes area about 35 km northwest of Fort Smith, and between 50 and 100 birds in 1983 and 1984. Although most of the birds (some perhaps still migrating) were observed at the Fox Holes in the N.W.T., others were sighted at Four Mile Lake and St. Bruno's farm in Alberta, respectively 6.5 km southeast and 30 km southwest of Fort Smith.

On 29 May 1984 Pankratz and D. Brannigan found a nest of a Wilson's Phalarope in the Fox Holes when the male fluttered from a nest in low, grassy vegetation in a wet meadow. The nest contained four buffy-green eggs spotted with dark brown markings, and was in the form of a woven grass cup well hidden in a clump of grass. The nest was about 50-60 m from a shallow lake containing a small grassy island and scattered stands of bulrush. The Fox Holes area is a large, flat expanse of generally wet meadows, shallow ponds and isolated clumps of willows, swamp birch, aspen and low shrubs. In addition to the bird attending the nest, about 30 other Wilson's Phalaropes (ratio of three males to each female) were seen in the area.

A second nest (only 20 m from the first nest) was found two days later when Pankratz returned to the Fox Holes with R. Lewis and other WBNP staff. Other birds observed in the Fox Holes included Mallard, Pintail, Green- and Blue-winged Teal, American Wigeon, Northern Shoveler, American Bittern, Sora, American Coot, Sandhill Crane, Common Snipe, Lesser Yellowlegs and California Gull, all of which can be expected to occur as cohabitants of Wilson's Phalarope.

No further visits were made to the area in 1984. On 13 May, 1985 Kuyt and J.P. Goossen (CWS, Edmonton) traveled to the Fox Holes but saw no phalaropes. Possibly the birds had not yet arrived. Finally, on 4 August 1985 Kuyt, Goossen and Jonathan Kuyt returned to the area and saw about 20 Wilson's Phalaropes in a shallow pond next to the former nest sites. It is possible that with continued good habitat conditions this interesting bird will remain an inhabitant of the wetlands near Fort Smith.

Literature Cited

American Ornithologists' Union. 1983. Check-list of North American Birds. Sixth Edition. 877 pp.

Erskine, A.J. 1968. Birds observed in north-central Alberta, summer 1964. Blue Jay 26:24-31.

Erskine, A.J. and G.S. Davidson. 1976. Birds in the Fort Nelson lowlands of northeastern British Columbia. Syesis 9:1-11.

Godfrey, W.E. 1966. The Birds of Canada. Nat. Mus. of Canada Bull. 203. 428 pp.

Kuyt, E. 1974. Wilson's Phalarope in breeding plumage near Fort Smith, N.W.T. Blue Jay 32:177-178.

Preble, E.A. 1908. A biological investigation of the Athabasca-Mackenzie region. U.S. Dept. Agric. N. Am. Fauna Ser. 27. 574 pp.

Sadler, T.S. and M.T. Myres. 1976. Alberta Birds 1961-1970. Provincial Museum of Alberta Occasional Paper No. 1. 314 pp.

Salt, W.R. and J.R. Salt. 1976. The birds of Alberta. Hurtig Publishers, Edmonton. 498 pp.

Sharp, P.L. and W.J. Richardson. 1976. Inventory studies of birds on and near Crown Lease Number 17, Athabasca Oil Sands, 1975. Part 2 of LGL Ltd. report for Syncrude Canada Ltd. pp. 1-669.

Soper, J.D. 1942. The Birds of Wood Buffalo Park and vicinity, Northern Alberta and District of Mackenzie, N.W.T., Canada. Trans. Royal Can. Inst. 24(1): 19-97.

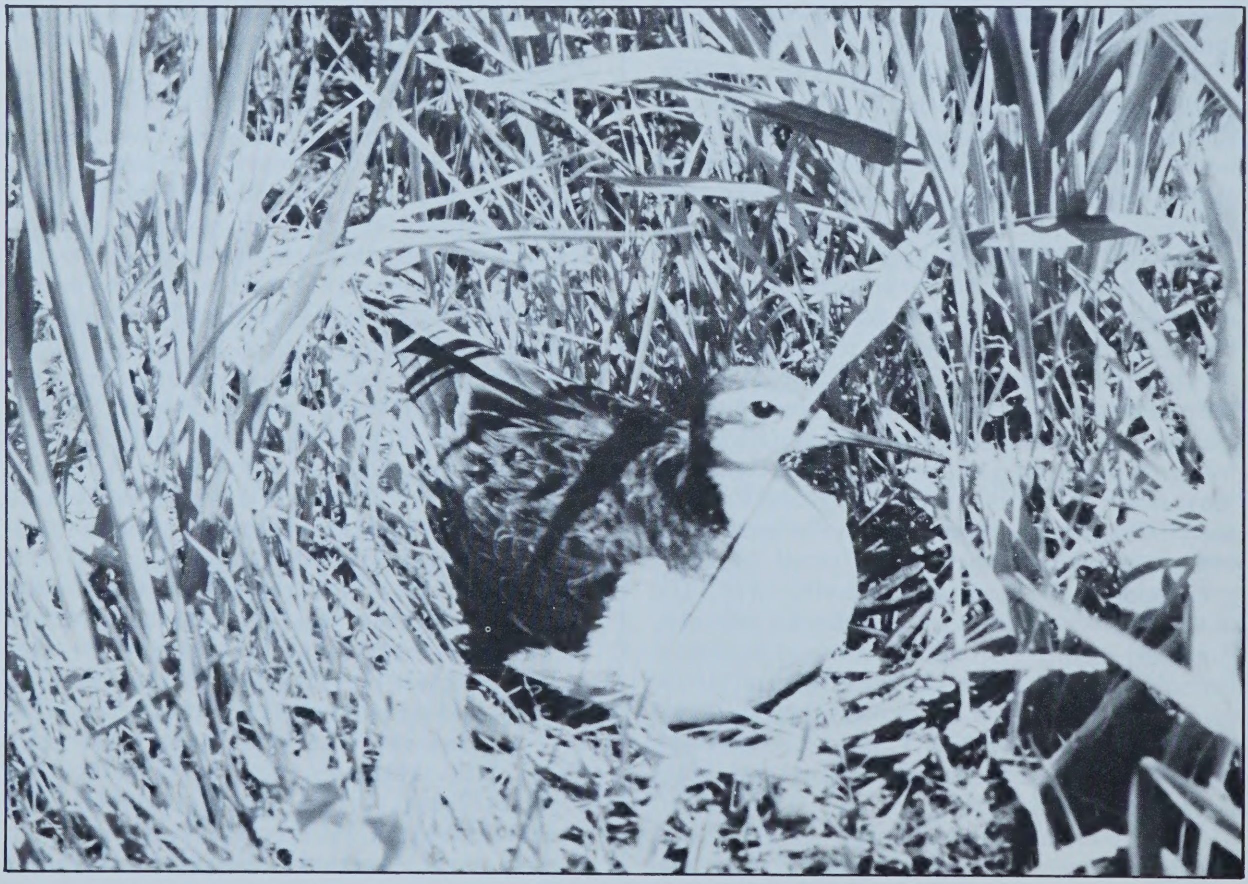
Tull, C.E. 1975. Ground surveys of terrestrial breeding bird populations along the proposed gas pipeline, Alberta, Saskatchewan and British Columbia, May and June, 1974. Arctic Gas Biol. Report Ser. 31(1):1-116.

Wiseley, A.N. and C.E. Tull. 1972. Ground surveys of terrestrial breeding bird populations along the Fort Simpson realignment of the proposed Actic Gas pipeline route, Alberta and Northwest Territories, June, 1975. Arctic Gas Biol. Report Ser. 35(6):1-59.

Authors' Address:
1. 11735-28 Avenue, Edmonton, Alberta T6J 3P1.
2. 3810-103B Street, Edmonton, Alberta T6J 2X9.

Male Wilson's Phalarope on nest.

Photo: Edgar T. Jones



Skippers and Butterflies of the Kootenay Plains, Alberta

Norbert G. Kondla

The Kootenay Plains area is located along the North Saskatchewan River, in the Front Ranges of the Rocky Mountains, between the White Goat and Siffleur Wilderness Areas. The 25 sq. km study area (essentially the Kootenay Plains Natural Area) is a valley bottom environment of large alluvial fans, recent fluvial deposits and glaciofluvial deposits on the lower valley sides, ranging in elevation from 1260 m to 1430 m. Climate is extremely arid; annual precipitation averaging 28 cm and sometimes as low as 14 cm (Pettapiece 1971). A combination of predominantly westerly winds and the 'rain shadow' setting of the valley probably account for this aridity.

Vegetation is essentially a mixture of forest and non-forest types. Forest vegetation consists largely of open- to closed-canopy lodgepole pine with smaller stands of white spruce, Douglas fir, limber pine, and aspen poplar. Shrublands are very rare; limited to small, local stands of willow. Grasslands are the most distinctive component of the study area vegetation with major species being *Agropyron dasystachyum*[1], *Koeleria macrantha, Artemisia frigida,* and *Antennaria parvifolia.* Open lower valley slopes are often dominated by mats of *Arctostaphylos uva-ursi* and lichen communities. Wetlands consist largely of seepage and spring-fed fens with sedges and swamp birch being the most abundant plants.

Further information on geomorphology and climate can be found in McPherson (1970) and Pettapiece (1971). Vegetation and floral information is available in Wallis and Wershler (1981).

Collections and observations were made on 21 different days in 1978, 1979 and 1981 between early May and mid-August in the complete range of habitats. Most of the collections and observations were made by the writer with some others provided by T. Kondla, S. Kondla, C. Kondla and F. Sperling.

Most of the common names are from Pyle (1981). Scientific names mostly follow Howe (1975) for genus and Miller and Brown (1981) for species and sub-species.

Annotated List

Hesperiidae

Persius Duskywing (*Erynnis persius*)-18-5-78, 7-6-78, 20-5-79, 21-5-79, 30-5-79, 25-6-79, 23-5-81; abundant at edges of poplar and mixed forest and in open pine forest.

Alpine Checkered Skipper (*Pyrgus centaureae loki*)-25-6-79; rare; small grassland.

Two-banded Checkered Skipper (*Pyrgus ruralis*)-17-5-78, 18-5-78, 20-5-79, 21-5-79, 30-5-79; locally abundant on bearberry slopes with bare silt and dry stream beds.

Arctic Skipper (*Carterocephalos palaemon*)-25-6-79, 26-6-79, 25-7-81; uncommon near mixed forest. Mountain populations differ from the boreal forest/aspen parkland subspecies *mandan* in that they are larger, generally darker, have unsilvered ventral hindwing spots and have a generally purplish brown ventral hindwing color.

Common Branded Skipper (*Hesperia comma manitoba*)-7-6-78; rare; small grassland.

Draco Skipper (*Polites draco*)-6-6-78, 22-6-78, 25-6-79, 26-6-79; fairly common; grassland, bearberry hillsides.

Papilionidae

Anise Swallowtail (*Papilio zelicaon nitra*)-25-6-79; seen once, nectaring in small grassland patch on hilltop.

Tiger Swallowtail (*Papilio glaucus canadensis*)-6-6-78; rare; aspen forest.

Pieridae

Spring White (*Pieris sisymbrii flavitincta*)-20-5-79, 21-5-79; rare in open Douglas fir forest.

Creamy Marblewing (*Euchloe ausonides*)-6-6-78, 25-6-79, 26-6-79, 23-5-81; uncommon in non-forested habitats generally.

Northern Marblewing (*Euchloe creusa*)-17-5-78, 6-6-78, 22-6-78, 30-5-79, 25-6-79; uncommon in non-forested habitats generally.

Common Sulphur (*Colias philodice eriphyle*)-7-5-78; rare in grassland.

Queen Alexandra's Sulphur (*Colias alexandra astraea*)-22-7-78, 19-7-79, 26-6-79, 25-7-81, 26-7-81; abundant in non-forested habitats generally.

Lycaenidae

Dorcas Copper (*Lycaena dorcas*)-30-7-79; rare in fen.

Brown Elfin (*Callophrys augustus iroides*)-17-5-78, 18-5-78, 20-5-79, 21-5-79, 29-5-79, 30-5-79, 23-5-81; abundant in most habitats except larger grasslands and dense pine forest.

Hoary Elfin (*Callophrys polios obscurus*)-17-5-78, 18-5-78, 20-5-79, 23-5-81, 24-5-81; locally abundant on open bearberry hillsides and in open coniferous forest.

Western Pine Elfin (*Callophrys eryphon*)-17-5-78, 18-5-78, 6-6-78, 21-5-79, 30-5-79, 25-6-79, 26-6-79, 23-5-81; fairly common in lodgepole pine forest.

Western Tailed Blue (*Everes amyntula*)-7-6-78, 22-6-78, 25-6-79; local in poplar forest.

---

[1] Nomenclature follows Moss (1983).

Tiger Swallowtail butterflies are not common in the area. Photo: J.D. Johnson

Spring Azure (*Celastrina ladon*)-23-5-81; uncommon and local in aspen poplar forest.

Silvery Blue (*Glaucopsyche lygdamus*)-6-6-78, 21-5-79, 29-5-79, 30-5-79, 25-6-79, 23-5-81, 25-7-81; fairly common in non-forest habitats.

Northern Blue (*Lycaeides argyrognomon scudderi*)-31-7-79, 25-7-81, 26-7-81; local in open rocky areas.

Greenish Blue (*Plebejus saepiolus*)-6-6-78, 25-6-79, 26-6-79, 19-7-81, 26-7-81; local in moist non-forested habitats.

Arctic Blue (*Plebejus franklinii megalo*)-22-6-78, 25-6-79, 26-6-79, 25-7-81, 26-7-81; fairly common in meadows and grasslands.

Nymphalidae

Variegated Fritillary (*Euptoieta claudia*)-25-7-81, 26-7-81; a rare straggler to this area.

Atlantis Fritillary (*Speyeria atlantis*)-26-7-81; rare in grasslands.

Hydaspe Fritillary (*Speyeria hydaspe*)-25-7-81; rare at edge of spring fen.

Mormon Fritillary (*Speyeria mormonia*)-14-7-79, 25-7-81, 26-7-81; abundant in non-forested areas.

Frigga's Fritillary (*Boloria frigga*)-6-6-78, 22-6-78; very local in spring fens.

Freya's Fritillary (*Boloria freija*)-17-5-78, 18-5-78, 20-5-79, 21-5-79, 30-5-79, 23-5-81, 24-5-81; locally abundant in lightly forested areas and, especially, dry stream beds and banks carpeted with yellow dryad (*Dryas drummondii*).

Field Crescentspot (*Phyciodes campestris*)-22-6-78, 25-6-79, 26-7-79, 25-7-81; uncommon in richer valley-side meadows and around valley bottom wetlands.

Anicia Checkerspot (*Euphydryas anicia anica*) -25-7-81, 26-7-81; found only in a valleyside fen/moist meadow complex.

Satyr Anglewing (*Polygonia satyrus*)-18-5-78; nothing can be said with certainty about this and the following anglewings due to the absence of field work in the fall when adults of the year would be on the wing.

Green Comma (*Polygonia faunus*)-18-5-78; status unknown.

Hoary Comma (*Polygonia gracilis*)-20-5-79, 30-5-79; specimens show transitional characters to subspecies *zephyrus,* which, until recently was considered a distinct species. Scott (1981) reported the conspecific status of these taxa. Examination of Alberta material by the writer and T. Thormin revealed that the mountain area between the Trans-Canada and Yellowhead highways is the primary area of extensive character intergradation.

Mourning Cloak (*Nymphalis antiopa*) - occasional sight records in various habitats.

Milbert's Tortoiseshell (*Nymphalis milberti*)-21-5-79; also occasional sight records in various habitats.

Red Admiral (*Vanessa atalanta*)-26-7-81; only found once in a valleyside meadow.

White Admiral (*Limenitis arthemis*)-26-7-81; locally distributed in and near deciduous forest.

Satyridae

Dark Wood Nymph (*Cercyonis oetus*)-19-8-78, 19-7-81, 25-7-81, 26-7-81; fairly common in dry grasslands. The subspecies *charon* is usually attributed to the Alberta fauna. In fact there appear to be two distinct subspecies in the province (possibly a third in the Peace River region). Mountain populations are quite dark, especially on the ventral surface. Prairie populations are quite pale and gray, more like the nominate subspecies and not at all like typical *charon* from Colorado. No integrading populations between the mountain and prairie phenotypes are known.

Uhler's Arctic (*Oeneis uhleri varuna*) - only reported by Wolley Dod (1908); no recent records.

Chryxus Arctic (*Oeneis chryxus*)-7-6-78, 22-6-78, 25-6-79, 26-6-79; uncommon in less dense pine forest; individuals of this population fly approximately one month earlier than populations of the higher montane and subalpine forest in the southern part of the Alberta Rockies.

Spruce Bog Alpine (*Erebia disa*)-7-6-78, 26-6-79; although typically found in moist spruce woods and wooded bogs, specimens here were found flying in dry lodgepole pine woods.

Common Alpine (*Erebia epipsodea*)-22-6-78, 25-6-79; uncommon in valley bottom habitats.

Discussion

A total of 43 species have been documented for the study area. The number of species per family is representative of the provincial situation except for the Nymphalidae which comprise a slightly larger portion of the local fauna than is the case in the provincial situation. The study area fauna consists 58% of taxa with a widespread Alberta distribution, 14% of taxa with an essentially boreal/cordilleran distribution, and 28% of taxa that are essentially cordilleran.

The most productive areas to observe butterflies in the Kootenay Plains are in and near the small wetlands and along forest edges. Herb-rich lower mountain slopes also support a greater variety of species than the valley bottom grasslands.

The Kootenay Plains study area is situated in the Montane Ecoregion which, as described by Strong and Leggat (1981), consists of several disjunct parcels of land occupying about 0.5% of the province. Douglas fir is the diagnostic species for this ecoregion and is often accompanied by limber pine. This very small ecoregion has a tremendous variety of habitats and environmental conditions.

The only other small Alberta area of montane habitats which has been intensively studied and documented for skippers and butterflies is the Indian Grave Campground area (Pinel 1983), 250 km southeast of the Kootenay Plains. Although these two areas are in the same ecoregion, the butterfly faunas are substantially different as discussed below.

The Indian Grave fauna is richer in total, with 61 known species. The faunal composition is also different in the significantly lower representation of Lycaenidae and greater representation of Nymphalidae in the Indian Grave fauna as compared to the Kootenay Plains fauna. The greatest species diversity in the Kootenay Plains occurs in late June, while species diversity in the Indian Grave area peaks in mid-July.

These differences in the two areas are correlated

White Admiral butterflies are locally distributed in and near deciduous forest. Photo: J.D. Johnson

with differences in geography, elevation, precipitation, and larval food plant diversity. The lower elevation and greater aridity of the Kootenay Plains likely accounts for the earlier species diversity peak than occurs in the Indian Grave area. The more northerly location of the Kootenay Plains places it outside the range limits of some of the Indian Grave fauna (eg. *Plebejus icarioides*). I believe a significant reason for the greater species diversity in the Indian Grave area is its proximity to the more continuous aspen parkland and grassland habitats immediately to the east. In contrast, the Kootenay Plains are separated by 130 km of subalpine and boreal habitats from the nearest aspen parkland habitat and an even greater distance from extensive grasslands. Although a quantitative floristic comparison is not available; personal experience in both areas suggests a much more depauperate flora in the disjunct montane habitats of the Kootenay Plains. This has implications for larval foodplant availability and probably explains the absence of typical montane species like *Boloria titania, Colias interior* and *Parnassius phoebus* from the Kootenay Plains fauna.

A number of additional species are likely to be found in the Kootenay Plains study area with further fieldwork. These include *Erynnis icelus, Pieris occidentalis, Pieris napi, Lycaena mariposa,* and *Phyciodes pascoensis.*

Acknowledgements

Many of the observations reported herein were made while conducting other studies for Alberta Recreation and Parks. C.D. Bird and H.W. Pinel kindly reviewed the manuscript.

Literature Cited

Howe, W.H. 1975. The Butterflies of North America. Doubleday, New York. 633 pp.

McPherson, H. 1970. Landforms and glacial history of the upper North Saskatchewan Valley, Alberta, Canada. Canadian Geographer 14:10-26.

Miller, L.O. and F.M. Brown. 1981. A Catalogue/Checklist of the Butterflies of America North of Mexico. The Lepidopterists' Society, Memoir No. 2. 280 pp.

Moss, E.H. 1983. *Flora of Alberta.* Second Edition. Revised by J.G. Packer. University of Toronto Press, Toronto, Ont. 667 pp.

Pettapiece, W. 1971. Land classification and soils in the Rocky Mountains of Alberta along the North Saskatchewan River valley. Alberta Institute of Pedology Reports 5-71-31.

Pinel, H.W. 1983. Skippers and butterflies of the Indian Grave Campground area, Alberta. Blue Jay 41:71-77.

Pyle, R.M. 1981. The Audubon Society Field Guide to North American Butterflies. Chanticleer Press, New York. 916 pp.

Scott, J.A. 1981. Book Review-Butterflies of the Rocky Mountain States. Journal of Research on the Lepidoptera 20:58-64.

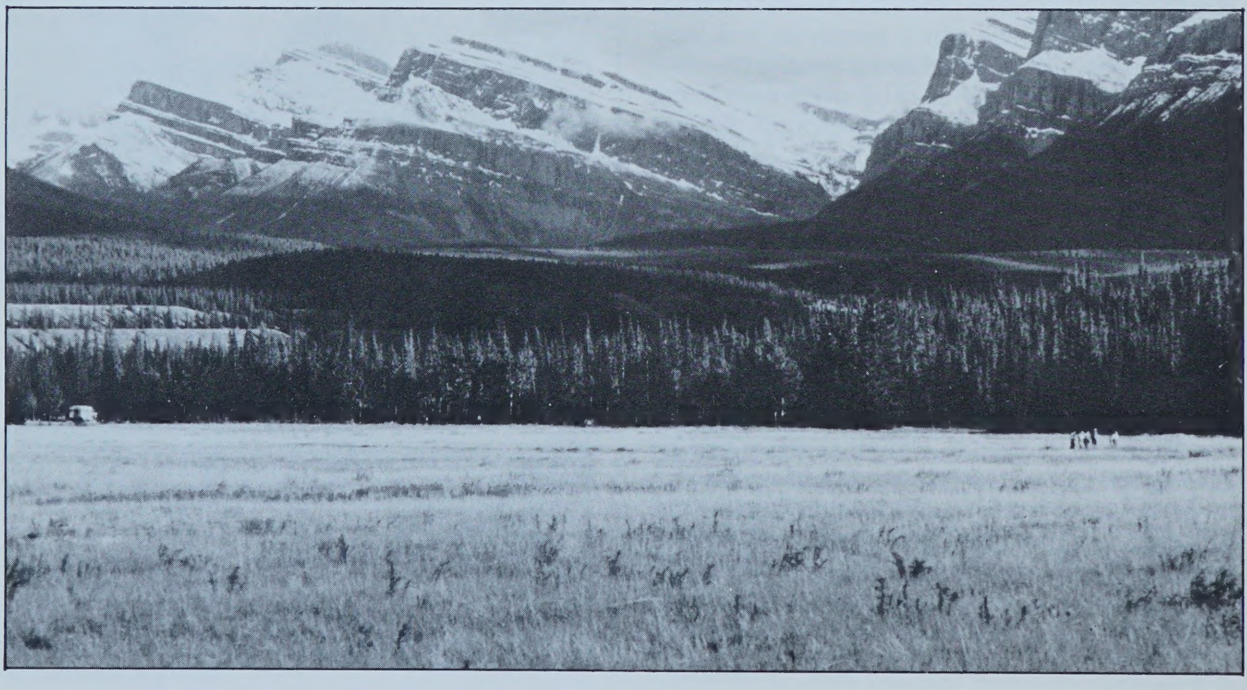
Strong, W.L. and K.R. Leggat. 1981. Ecoregions of Alberta. Alberta Energy and Natural Resource Technical Report Number T/4, 64 pp. and map.

Wallis, C. and C. Wershler. 1981. Kootenay Plains flora and grasslands assessment. Unpublished report for Alberta Energy and Natural Resources. 59 pp. plus data sheets.

Wolley Dod, F.H. 1908. Further notes on Alberta Lepidoptera. Canadian Entomologist 40:181-193.

Author's Address:
Alberta Energy and Natural Resources, 530-8 Street S.,
Lethbridge, Alberta T1J 2J8.

The Kootenay Plains appear as a prairie landscape in a mountainous setting. Photo: J.D. Johnson



F.A.N. NEWS

Spring Meeting

The Spring Meeting of the Federation of Alberta Naturalists will be held in Stettler, hosted by the Buffalo Lake Naturalists, on the weekend of May 10-11, 1986. The meeting place is the Stettler Arena / Community Centre. Numerous good motels and campgrounds are available in the area. Field trips are tentatively planned to the Buffalo Lake area on Saturday, May 10, and along the Red Deer River valley on Sunday, May 11. Lloyd Lohr insists that this is just about the best time to do some spring birding and looking for spring flowers in the Alberta Parkland. With his and other locals' guidance on the field trips, members can look forward to an enjoyable spring meeting.

Registration (just sign in - no charge!) for the meeting will be at 7:00 p.m. Friday and 9:00 a.m. Saturday (for latecomers). Directors will meet starting at 10:00 a.m. Saturday. The Stettler Arena / Community Centre is on the south side of town near the fairgrounds; signs will be posted on Highways 56 and 12. Anyone who has a canoe may wish to bring it along as there will be an opportunity to take a short trip along the Red Deer River. For further information, contact Lloyd Lohr, 742-3846; or Wilf / Gladys Hewlett, 742-3739.

Summer Meeting

Plans are being made for a summer field trip (no business meeting - yeahh!!) to the Rocky Mountain House area on the July 5-6 weekend. Red Deer River Naturalists will be our hosts for this event. Details will be forthcoming. For further information, contact the F.A.N. office at 428-3033.

Fall Meeting

The Lethbridge Naturalists' Society and the recently formed Grassland Naturalists of Medicine Hat will be cooperating in the hosting of a Fall F.A.N. meeting in Brooks, Alberta. This is a new meeting place and will give F.A.N. members and directors an opportunity to meet local naturalists in the Brooks area and other parts of southern Alberta. The meeting will be on September 13-14.

1987 A.G.M.

F.A.N. will be holding this meeting on January 24-25, 1987. The theme of Urban Natural Areas and the Role of Nature Centres is being discussed as a possible topic. Tentatively, the meeting will be held in Calgary, but final confirmation depends on arrangements. Further details will be included in the next *Alberta Naturalist.*

F.A.N. Office Headquarters

F.A.N. established an office in July 1985. Jo Wiskerke was hired as the Executive Assistant. She works three days per week, Tuesday to Thursday and is paid $8.00 per hour. The office is located in the Edmonton Parks and Recreation's River Valley Outdoor Centre which was formerly the Donald Ross School at 10125-87 Ave. Tasks initially projected, accomplishments and projects to be completed are listed below.

1. Main Tasks initially projected for Executive Assistant
- set up office.
- assist the executive.
- complete the 10 Year Index.
- enter membership lists onto computer for mail outs.
- assist with Special Events (Poster Contest, Klondike Days Display, and Endangered Species Workshop).

2. Accomplishments
- office is well established.
- Poster Contest and Klondike Days Display very successful.
- E.S.P. workshop response much more than expected (410 participants).
- computer installed in November, becoming familiar with word processor and set up correspondence log.
- *A.N.* mail out to schools in Alberta organized.

3. Projects to Complete
- 10 Year Index formatted and entered into computer.
- enter membership lists onto computer and set up mailing labels.
- develop a computerized format of 3 Year Development Plan.

The office is well established. Sometimes it is difficult to find the time to "play" with the computer since there have been more important duties such as the E.S.P. workshop, A.G.M. annual reports, minutes, and letters to government officials concerning various environmental issues. Contacts have been made with other environmental groups, such as the N.P.P.A.C., Environmental Resource Centre and Environmental Law Centre, to let them know about our new office.

Jo Wiskerke

President's Report

Being a president of an organization is, I believe, something like being a parent. Generally, people are not "trained" to be parents or presidents. One learns by example, studying techniques and styles of different predecessors. One undertakes the role by setting personal criteria for what constitutes a "good" effort, by watching the development of one's charge and occasionally taking control to guide that development.

How successful one is as a president depends on how one perceives the role of president and how much support one receives from the membership. I cannot judge my own success in that role, but I have benefitted from strong support from the directors and membership and that has made me feel confident to promote F.A.N. involvement in a number of issues and activities over the past two years. A number of committee reports are being published in the *Alberta Naturalist;* their purpose is to inform those members not directly involved on all that is happening on your behalf. I encourage you to read those reports as many people devoted considerable effort and time to F.A.N. activities.

So many people have helped me during the past two years that I fear to name them all would make this an excessively long report. All their contributions have been valuable and I would not want to slight anyone by leaving them out. They know that they gave a hand, occasionally twisted behind their backs! I would like to thank them all very much. Two people gave of their time and energy continuously over the past two years and I would like to acknowledge that special effort. Eileen and Fred Coffey, Membership Secretary and Treasurer, respectively, have been diligent in their tasks keeping F.A.N. running. They have become good friends and a source of encouragement whenever we needed to mail out the *Alberta Naturalist* and other activities. When Fred suffered a stroke in September last year I was very saddened. I am sure you will all join me in supporting Eileen and wishing Fred the best on his way to eventual recovery.

As president, I have had the opportunity to follow natural history events very closely and to study the changes in F.A.N. in relation to those events. We have changed over the past 15 years, and I feel F.A.N. has become stronger as a provincial naturalist organization. Where do we go from here? I suggest the following as guidelines for the future, sort of a 5-year plan, so that on F.A.N.'s 20th birthday we can gauge our development. As in my last President's Report, I refer to these guidelines using F.A.N.'s stated objectives.

1. To promote knowledge of natural history.
- maintain a high quality naturalist publication.
- seek opportunities for special publications, as these have enduring value and can reach a wide audience.
- consult with museum, government, university and nature centre specialists to identify cooperative roles that naturalists can undertake to fill important gaps in our knowledge of Alberta natural history.
- seek alternative ways of promoting natural history knowledge and develop training programs for directors and members in these techniques.

2. To promote communication between natural history clubs.
- improve the present communication by including some news about each club in every *Alberta Naturalist*.
- this should not be considered a chore but an opportunity for advertising your club's activities and encouraging new members.
- publish annually a list of the key facts about each club in the A.N.
- develop a regular procedure for informing corporate clubs of FAN's meetings and about action alerts.
- continue to arrange F.A.N. meetings in different parts of the province co-sponsored by local clubs and ensure advance planning is done to allow members time to plan attendance.
- encourage clubs to take advantage of F.A.N.'s grant program to corporate members.

3. To foster formation of new naturalist clubs.
- systematically identify the greatest potential new areas for clubs and actively approach key people in those areas.
- develop a package of information about F.A.N. how to start and run a new club, etc. to provide help in potential club areas.
- plan F.A.N. meetings, especially field trips, to visit areas of potential clubs.

4. To promote conservation of natural areas and wildlife/plant species.
- continue to follow and prod the provincial government's Ecological Reserves and Natural Areas program.
- contribute to the provincial Buck-for-Wildlife program, financially (as we have been doing for several years) and with suggestions/workers for non-game oriented habitat conservation programs.

- participate in endangered species programs through active involvement in committees, monitoring populations through regular research projects (under careful guidelines) and emphasizing such key species in environmental education programs.

5. To organize and conduct symposia, conferences, field meetings, nature camps and research activities.

- the 1986 Endangered Species of the Prairie Workshop has been a model for the potential of cooperative sponsorship of a conference.
- future Annual General Meetings should be planned to take advantage of the tremendously positive note of cooperative action shown by the E.S.P. Workshop.
- develop an approach to planning meetings and field trips so that they meet the needs of Alberta's naturalists i.e. by providing guidelines for action, by informing on important issues and above all by being interesting and fun.
- set up a regular committee of F.A.N. for coordinating meetings and preventing last-minute rushes.

6. To provide a forum for discussion of conservation of natural resources.

- disseminate the results of *ad hoc* committees dealing with conservation issues as widely as possible so that F.A.N. members can understand the positions taken on their behalf.
- print up copies of briefs and policy papers to make available to members.
- ensure that meetings include opportunities for public discussion of conservation issues.

As I settle into the role of Past President, I shall be grateful for the luxury of being able to contribute to F.A.N.'s development with less of the responsibility and pressure that faces the President. I wish Pat Clayton the best of luck as she takes over, and I will endeavor to make her task as easy as possible.

David M. Ealey

Finance Committee Report

The Finance Committee met informally during 1985 to complete and file:

1. 1985 Profile and Application for Financial Assistance to Recreation Associations - Recreation and Parks, and Recreation, Parks and Wildlife Foundation.

2. 1984 Publications Assistance application to Alberta Culture.

3. 1984 Historical Education (Directors' Meetings Mileage) application with Alberta Culture.

An application was filed on behalf of FAN for a PEP grant to complete an Ecological Awareness Survey.

A STEP grant was applied for by FAN to employ a person to plan, to seek donations of time, material and money, and to produce an Environmental Education display. The volunteers came from the Edmonton Bird and Natural History Clubs.

The Poster Contest was funded entirely by donation money with some of the new Executive Assistant time employed in associated office work.

Part of the 1985 Profile and Application was a request for financial assistance to hire a person to run the day by day operation of FAN. $10,000 was approved and Jo Wiskerke was hired part time. Her duties include:

1. Assisting with A.N. membership mail outs and organizing those 850 extra copies to schools.
2. The Wildlife Habitat Stamp and Print project.
3. Registration for the Endangered Species Workshop.

The financial records, including payroll, were kept by Fred Coffey. They were up to date and in excellent order when he had his unfortunate stroke in September. They have been maintained in the interim by Pat Clayton.

Our auditor, Graeme Greenlee moved to Lethbridge during the summer, so Lyman Matthews consented to advise and audit the records. FAN is grateful that Lyman, one of the Federation's first treasurers, was willing and able to perform this service. Thanks are also due to Graeme for his past efforts on behalf of FAN. An official new auditor will be appointed by the Board.

The Budget for 1985 was adhered to except that:

1. Membership did not increase to projected figures.
2. *A.N.* costs continued beyond 1984 levels at approximately $5.33/copy.

The proposed budget for 1986 is in keeping with the planned expenditure for 1986 in the three-year projection with the addition of:

1. Grande Prairie - Trumpeter Swan - Meeting. We will apply for travel monies.
2. Youth Camp - Ministik. Assistance with bursaries or travel expenses.
3. Annual Meeting of the Board 1987. We will try for a Hosting Grant as we may not be so fortunate with donors as for the 1986 AGM and workshop.

Pat Clayton

Membership and Publicity

Several events and activities, in which FAN was involved in 1985, were used to promote the Federation, seek new members and generally increase the profile of naturalists in the province. As membership and publicity chairman much of my time was spent in coordinating activities, such as the poster contest "What would life be like without wildlife?", the summer display program in Edmonton, and planning of the Endangered Species Workshop. We now have much of the material needed to make an ongoing effort at promoting the Federation, as well as considerable knowledge in how to do such promotion.

1. Poster Contest
- all schools in the province with grades 4 through 6 were sent contest material.
- response: over 1500 posters were submitted.
- prizes: winners had enjoyable wildlife experiences with the trip to Wood Buffalo National Park and trips to Wainwright Captive Peregrine Breeding Facility.
- book prizes were well received and many students were particularly thrilled to have their posters displayed during Environment Week.

2. Display Program
- reached 75,000 people who actively participated at our booth at various events.
- recognition: runner-up award at Klondike Days.
- cooperative effort with Edmonton naturalist clubs, and with 4-H Habitat Program.
- supported by donations of supplies and material (full report in Winter 1985 issue of *Alberta Naturalist).*

3. Endangered Species Workshop
- press kit was prepared for this workshop and will serve as a model for future meetings (special thanks to Mike Quinn).

4. Publicity Boards
- this project is partially planned and awaits completion.
- would promote F.A.N.'s and local clubs' activities through Urban Nature Centres.

5. Advertising Brochure
- prepared a brochure layout to be used as a guide to advertisers for advertising in the *A.N.*
- major work done by a student (Nancy Shorter) from Grant MacEwan Community College.
- advertising brochures should be printed in 1986 for assisting efforts at securing advertising.

6. Current Membership
- Individuals: 335; Institutions: 36; Schools: 24 (Total 395 paid subscriptions).
- Complimentary: 18; Exchange: 27; (Total 45 unpaid subscriptions)

Special thanks to Eileen Coffey for her diligent efforts as Membership Secretary.

7. Audio-Visual Presentation
- development of an audio-visual program to introduce FAN to potential members is being planned for 1986.
- donations would be appreciated of any slides of field trips with people, wildlife, plants and landscapes.
- send to FAN Displays, Box 1472, Edmonton, Alta. T5J 2N5.

Although membership has not been increasing wildly, the Federation now is better known, I believe, throughout the province. It is an ongoing job to promote an organization and we now have some of the tools needed. The best aid to a publicity program is a keen and enthusiastic membership. If each member were to interest one new person in FAN, we could double our membership and do a better job of promoting natural history as a result.

David M. Ealey

Renewable Resources Study Group - P.A.C.

On January 18, 1985, Dr. Paul M. Woodward and Dr. Joan Snyder were installed as Chairman and Vice-chairman respectively. Mr. Gary Sykes, another Study Group member, was seconded to the Science Advisory Committee with responsibility to chair a sub-committee on water.

Throughout the year the Renewable Resources Study Group took an active interest in the following issues:

1. Eastern Slopes Policy
2. South Saskatchewan River Basin Hearings
3. Abandoned Railway Rights of Way
4. Bill 84: Wildlife Act
5. Highwood River Diversion
6. Agricultural Hearings (Maintaining the Land Base)
7. Sale of Crown Lands
8. Cold Lake - Beaver River Water Management
9. Access on Agricultural Crown Land

We devoted a great amount of energy in trying to change government perspectives and policies. A number of letters were written to the Honourable Don Sparrow, as well as other cabinet ministers. Twice we solicited assistance from Premier Lougheed.

During the January 18th meeting, Mr. Mike Kelly, an E.C.A. Research Officer, introduced the Study Group to the concepts of the World Conservation Strategy. Mr. Elmer Kure moved "Study Group agreed to serve as the catalyst for the development of a Provincial Conservation Strategy—." The motion was seconded and passed. Dr. Joan Snyder and Mr. Elmer Kure volunteered to assist Mr. Kelly in developing the required documents.

During the March 15th meeting Dr. David A. Munro, as consultant to the World Conservation Strategy, spoke to us. His message provided the inspiration needed to carry on a task that seemed impossible. At the time of this report, this Study Group has produced a number of press releases, several drafts, and a prospectus for an Alberta Conservation Strategy. P.A.C. adopted the A.C.S. as the theme of the 1985 Annual Joint Meeting and at that meeting that prospectus was accepted.

At our May meeting Mr. Charles Stewart, an Agricultural Hearing Panel member, discussed the E.C.A. Report and Recommendations on Maintaining and Expanding the Agricultural Land Base with us. The discussion was most enlightening and the panel recommendations recognized in principle those issues raised in our group's brief at the hearings.

The Study Group followed with interest the development of the water management plan for the Cold Lake - Beaver River area. We were pleased to see the final decision to pipeline water from the North Saskatchewan River to be used for injection to recover heavy oil. The commitment to recycling is also important to safeguarding the area's environment.

We feel that this is an example of integrating industrial and environmental concerns that can only be achieved through honest public consultation.

Harvey Gardner

Publications Committee Report

The Publications Committee consisting of the editorial staff of the *Alberta Naturalist,* plus Marg Reine and Pat Clayton, was involved in three projects over 1985, in addition to the regular *A.N.*'s. One is going on as planned, one was cancelled and the third has been delayed.

1. School Distribution of the *A.N.*

- 850 high schools in Alberta should have received two issues of the *A.N.* as of the end of January.
- costs have been within the general range of estimate.
- the remaining two issues of the *A.N.* will be mailed out in spring and summer.
- a follow-up letter will be sent to the school libraries to determine what use has been made of the *A.N.* and whether the schools wish to continue to receive copies by subscribing.

2. Natural History Booklet Series

- "A Prairie Coulee", potentially the first in this series, was withdrawn by the author Tom Willock in late November.
- disagreement regarding the format and expectations of the author, as well as the complicating involvement of the actual owner, Alberta Fish and Wildlife, led to the withdrawal.
- due to the lateness of the withdrawal, and the unlikelihood that we could find a replacement manuscript in time to complete publishing by January 1986 (the deadline for the R.P.W. grant), we had no choice but to return the $1,000 advance on the grant and advise the R.P.W. Foundation that we had to forego the remainder ($6,000).
- we will be considered for future types of funding but it is recommended that some written agreement regarding ownership and publisher's control be entered into prior to requesting funding.

3. Ten Year Index of the *Alberta Naturalist*

- a computer has been purchased to use in production of the *A.N.* Index.
- Jo Wiskerke will be working on the formatting and entry of the Index early in 1986.
- no change to the estimated $6,000 for printing and other costs has been identified, and this amount should be transferred to the 1986 budget.
- copies of the Index will be made available to members free on request and at cost to non-members.

4. Spring Activities Book

- interest has been expressed in a spring environmental activities book for students as a follow-up to the "Fall-Out" booklet.
- budgeting for this should be considered for the 1987 budget.
- Liz Stinson would be interested in tackling the preparation of the booklet over fall 1986 and winter 86-87.

Publications continue to be a major portion of F.A.N.'s program effort, and a very time consuming portion. Our goal should be to ensure quality and that the diverse functions of the *A.N.* are achieved (i.e. newsletter, information source, publisher of original natural history material, and entertainment).

David M. Ealey

Fish and Wildlife Advisory Council Report

The primary interest of the council is to ensure that government policies, programs and laws to manage the fish and wildlife resources of Alberta recognize the needs and sensitivities of all resource users. In 1985, one field meeting (June) and two business meetings (August, November) were held. Margot Hervieux attended in August, while I attended the other meetings.

The emphasis of much of the business meetings was on the regulations to the new Wildlife Act. We presented the case for non-game species management and consideration of non-consumptive use of wildlife as best we could in a forum heavily stacked in favour of the strictly consumptive points-of-view.

1. June Field Meeting
- tour covered southern portion of the province very thoroughly.
- emphasis on cooperative programs - Buck for Wildlife, Ducks Unlimited projects.
- some major initiatives focusing on wetland creation and retention were shown to the council.
- the continuing degradation of wildlife habitat was evident from draining, conversion to irrigation and even the "clean-up" of old canals for water conservation.
- a visit to the major trout hatchery revealed the strong dependence on expensive put-and-take fishery techniques to meet the demands of the large sport fishing population.

2. August Business Meeting
- the complexities of regulations dealing with commercial traffic in wildlife products were demonstrated in a series of regulations regarding transfer of ownership in legitimately hunted trophy heads, antlers, meat, hide and body parts.
- position taken by FAN's representative was to diminish opportunities for untraceable trafficking in meat and body parts but to allow certain kinds of disposal of trophy heads.

3. November Business Meeting
- key business was discussion of the Grazing Lease Conversion Policy.
- voiced strongly our opposition to this policy on principle that it would increase areas of public land to which the public could be denied access for recreation, would diminish wildlife habitat in areas where little habitat remains, and would not guarantee cultivation would occur.
- agreed that the money from any sales of public land should go to a fund to purchase key wildlife habitat from private owners.
- bowhunters association made a good presentation on their organization and requested increased opportunities for hunting in additional parts of the province.
- supported bowhunters appeal because of potential to reduce conflict in the concentrated bow zones currently used.
- expressed opposition to any attempts to introduce another exotic species (Himalayan Snow Cock) to the game population of Alberta.

The Associate Minister expressed his appreciation for all input from Council members, such input, I believe, has been instrumental in effecting some change in planning policy. However, once a policy has been set the government is almost intransigent, so that our objective as a participant in the council should be to anticipate policy direction and provide input on options that favour a balance in conservation/preservation of all natural resources.

David M. Ealey

Alberta Ornithological Records Committee

The year 1985 proved to be satisfactory for the AORC although the verdict was in doubt from the year's beginning to nearly the end of December. Thanks to Doug Collister and the regional compilers and contributors we managed to publish all four *Alberta Bird Records* during the year and are now as current as possible with respect to the season of reporting of this journal. There are currently about fifty paid-up subscribers for 1986, offering us enough of a following to continue publishing and to strive to improve and expand the *A.B.R.*

The *A.B.R.* itself has surprised us with the numbers of people submitting records and the improvement in the quality of reports we have seen over the past year or more. Presently nine of twelve regions are submitting seasonal reports. The regions of Athabasca and Wainwright still have no compilers identified.

There were two meetings of the AORC in 1985. Issues under discussion are the establishment of a rarities review committee and a model system for computer reporting and compilation. A meeting in the near future is planned.

The Alberta Breeding Bird Atlas Project is being re-vitalized and there are now real possibilities for funding and participation by agencies of the Federal and Provincial governments. We may be able in the near future to meet with appropriate representatives from these agencies and other interest groups to map out plans. An Atlas presentation was given at the Endangered Species Workshop in Edmonton.

Allen N. Wiseley

Environmental Education Committee

The environmental education committee was involved in one project in 1985. In response to the cutbacks in the federal Department of the Environment, F.A.N. held a province-wide poster contest. Over 1500 elementary school students submitted posters illustrating the theme "What would life be like without wildlife." The winner (by draw) won a flight over Wood Buffalo National Park. In addition, the 50 (artistically) best posters were selected for display at the John Janzen Nature Centre in Edmonton, Sun Ridge Mall in Calgary and the Helen Schuler Coulee Centre in Lethbridge. These same 50 posters were then sent to the Professional Institute of the Public Service of Canada in Ottawa, to be displayed at their National Convention.

Margot Hervieux

F.A.N. Standing Committees 1986

1. RESEARCH - Al Wiseley (Chairman), Derek Johnson.
2. WILDERNESS, PARKS AND NATURAL AREAS - Mike McIvor (Chairman).
3. PUBLICATIONS - John Powell (Chairman).
4. ENVIRONMENTAL EDUCATION - Marg Reine (Chairman).
5. ENDANGERED SPECIES - Rob Gardner (Chairman).
6. FINANCE - Dave Cuthiell (Chairman).
7. PUBLICITY - Dave Ealey (Chairman).
8. BY-LAWS AND CONSTITUTION - Harvey Gardner (Chairman).

F.A.N. Representatives

9. PUBLIC ADVISORY COMMITEE - Harvey Gardner (Rep.)
10. LAND USE - Maryhelen Posey (Rep.), Dorothy Broadbent, Fred Schutz, Mike McIvor and Harvey Gardner.
11. ALBERTA ECOLOGICAL SURVEY - Derek Johnson (Rep.)
12. CANADIAN NATURE FEDERATION - Don Stiles (Rep.)
13. FISH AND WILDLIFE ADVISORY COMM. - David Ealey (Rep.), Margot Hervieux (Alt.)
14. FEDERAL/PROVINCIAL WILDLIFE CONFERENCE - Maryhelen Posey (Rep.)
15. ALBERTA ORNITHOLOGICAL RECORDS STEERING COMMITTEE - Al Wiseley (Rep.)
16. LONG-RANGE PLANNING AND POLICY - Dave Ealey (Rep.)
17. CLIFFORD E. LEE NATURE SANCTUARY - (vacant)
18. ELLIS BIRD FARM - Fred Schutz (Rep.)
19. WAGNER NATURAL AREA SOCIETY — (vacant)

From the Editor

The *Alberta Naturalist* continued in its new format in 1985. A total of 4 issues with 144 pages was prepared. This is 12 pages less than in 1984. Delays, not the least of which is waiting to have enough material to publish, continue to plague efforts at getting the issues out more or less on time. Some of these delays will just have to be lived with as there is little chance of improving the situation. The unresponsiveness or reluctance of some to submit material to the *A.N.* when approached is distressing. Most of the material which now appears in the *A.N.* is "volunteered".

An elaborated Editorial Policy is being worked on. It is hoped the new policy will expedite publication of submissions in the *A.N.* A questionnaire soliciting membership response concerning the publication of Christmas Bird Counts, May Species Counts (Birds), rare bird sightings, and range extensions in the *A.N.* and/or the *Alberta Bird Record* has been included in this issue of the *A.N.* Members are encouraged to let their feelings be known on this matter.

In distributing my annual accolades I again wish to thank Dick Dekker and Dave Ealey for their considerable help in compiling and producing the *A.N.*; Eileen and Fred Coffey, Pat and Dick Clayton, Dave and Joan Ealey, Jean Burgess, and Marg Reine for their assistance as part of the regular mail out crew; and Phil Debnam and Jim Baker of the photographic services section at the Northern Forestry Centre for donation of their efforts preparing black and white prints for publication. Finally I would like to thank all the contributors to the *A.N.* over the past two years. Your efforts have made the *A.N.* what it is today. I must also dish out one brickbat to Canada Post for creating a very confused mail out crew trying to figure out their second class mail regulations!

I have left the most serious matter for last. The *A.N.* is currently faced with a financial crisis. We cannot continue publication on the current basis unless our financial situation improves. The *A.N.* has achieved a respectable level of quality over the past two years, but to do so has been expensive. Ways and means to cut expenses are being explored, but the bottom line is clear - to keep the *A.N.* going in its present format will require additional sources of funding, as well as the continued support of the membership. As Dave Ealey suggests in the President's Report, why not introduce a friend to the *A.N.*? Every new membership will help!

J. Derek Johnson

Questionnaire

Over the past couple of years it has become evident that there are now two potential outlets for the publication of Special Project reports (i.e. Christmas Bird Counts and May Species Counts - Birds), namely the *Alberta Naturalist* and the *Alberta Bird Record.* In order to avoid duplication and/or potential competition for material the opinion of the membership of FAN is being solicited on where this material should be published. The following questions have been designed with this in mind. A lack of reponse to these questions will indicate to the editors satisfaction with the *status quo*. Please let your feelings on this matter be known. Responses should be sent c/o the FAN Box No. in Edmonton.

1. Where do you feel it is most appropriate for the results of the May Species Count (Birds) to be published?

a) the *A.N.* c) both
b) the *A.B.R.* d) neither

2. Where do you feel it is most appropriate for the results of the Christmas Bird Counts to be published?

a) the *A.N.* c) both
b) the *A.B.R.* d) neither

3. Which publication do you feel is the most appropriate medium for publishing notes on rare bird sightings, range extensions, etc.?

a) the *A.N.* c) both
b) the *A.B.R.* d) neither

4. *If* the results of Special Projects are to be published, in what form would you like to see them presented?

a) in their entirety in the *A.N.* (including the detailed tabular listing of species)
b) in their entirety in the *A.B.R.*
c) summary in the *A.N.*, details in the *A.B.R.*
d) summary in the *A.B.R.*, details in the *A.N.*
e) summaries only in either publication (without the detailed tabular listing of species)
f) other (please specify)

Club News

Space does not permit the inclusion of summaries of the Annual Reports of the member clubs. These will appear in the Summer issue of the *A.N.*

ANNOUNCEMENTS

Canadian Nature Federation Conference St. John's, Newfoundland - July 23-26, 1986

The Canadian Nature Federation will be hosting its 15th Annual National Conference July 23rd to 26th, 1986 at Memorial University, St. John's, Newfoundland.

Conference activities include natural history tours to Newfoundland's many rich and diverse wild areas; a Symposium titled, "Island Ecology: A Disappearing Wilderness"; and a full schedule of social events highlighted by a "Newfie Night". In all, a wonderful opportunity for a most unique and educational family holiday!

For a detailed brochure outlining Conference activities and tours, please contact the Canadian Nature Federation, 75 Albert St., Ste. 203, Ottawa, Ont. K1P 6G1 or call: (613) 238-6154.

Recreation and Environmental Education Manuals Available

Alberta Recreation and Parks has developed a series of Learning Resources Manuals for use by group leaders and teachers of students age eight to twelve.

The material is based on Alberta Educational curriculum guidelines and incorporates several disciplines. These manuals are oriented to recreation and environmental education within selected provincial parks and include activities and information on the natural and cultural histories of the area.

Manuals available April 1, 1986 include: Cypress Hills, Dinosaur, Lesser Slave Lake/Hilliard's Bay, Miquelon Lake, and Writing-On-Stone Provincial Parks. A manual for use at other provincial parks is also available which includes resource information and activities on a specific park which you may wish to visit. A total of 32 provincial parks and recreation areas across the province will be included in the series upon completion in 1988.

For more information about environmental education services from Alberta Recreation and Parks, contact:

Environmental Education Co-ordinator, Alberta Recreation and Parks, 1660 Standard Life Centre, 10405 Jasper Avenue, Edmonton, Alberta T5J 3N4.

Acid Forming Emissions in Alberta and their Ecological Effects

The second Symposium/Workshop on acid-forming emissions in Alberta and their ecological effects is being held May 13-15, 1986, at the Palliser Hotel, Calgary, Alberta. The purposes of this symposium/workshop are to improve the exchange of information on environmental research, monitoring, and control technologies and control policies; to identify future research needs; and to involve the public.

For further information, please contact:

A.H. Legge, Co-chairman, Kananaskis Centre for Environmental Research.
Phone: (403) 220-6084.
H.S. Sandhu, Co-chairman, Alberta Environment Research Management Division.
Phone: (403) 422-2071.

Environmental Colouring Books

Public Focus On The Great Lakes, a non-profit environmental education organization, has produced a series of environmental colouring/activity books for children. *The Dotted Dragon, A Colouring Book on the Great Lakes; Rain Rain Go Away, A Coloring Book on Acid Rain;* and *Treasures in Your Garbage Bag, A Coloring Book on Recycling,* are all now available from Public Focus.

These unique books are designed to bring the complex issues of toxic chemicals, acid rain and recycling into focus for children. Thematic in content, the issues are set in a context which makes them understandable to children. Moreover, they represent a positive, non-threatening approach to finding solutions to key environmental problems.

These publications may be ordered from:
Public Focus, 208 Bloor Street West, Suite 603, Toronto, Ontario M5S 1T8, Telephone (416) 926-8121.

Information Wanted - Whooping Crane Sightings

The Canadian Wildlife Service is establishing a reporting and monitoring program to document Whooping Crane stopovers in the prairies during spring and fall migration. This information will help the C.W.S. to identify, describe and protect critical habitat.

Anyone who suspects that they have seen a Whooping Crane is asked to call the WHOOPING CRANE HOT LINE at (306) 975-5595 (a 24 hour answering service).

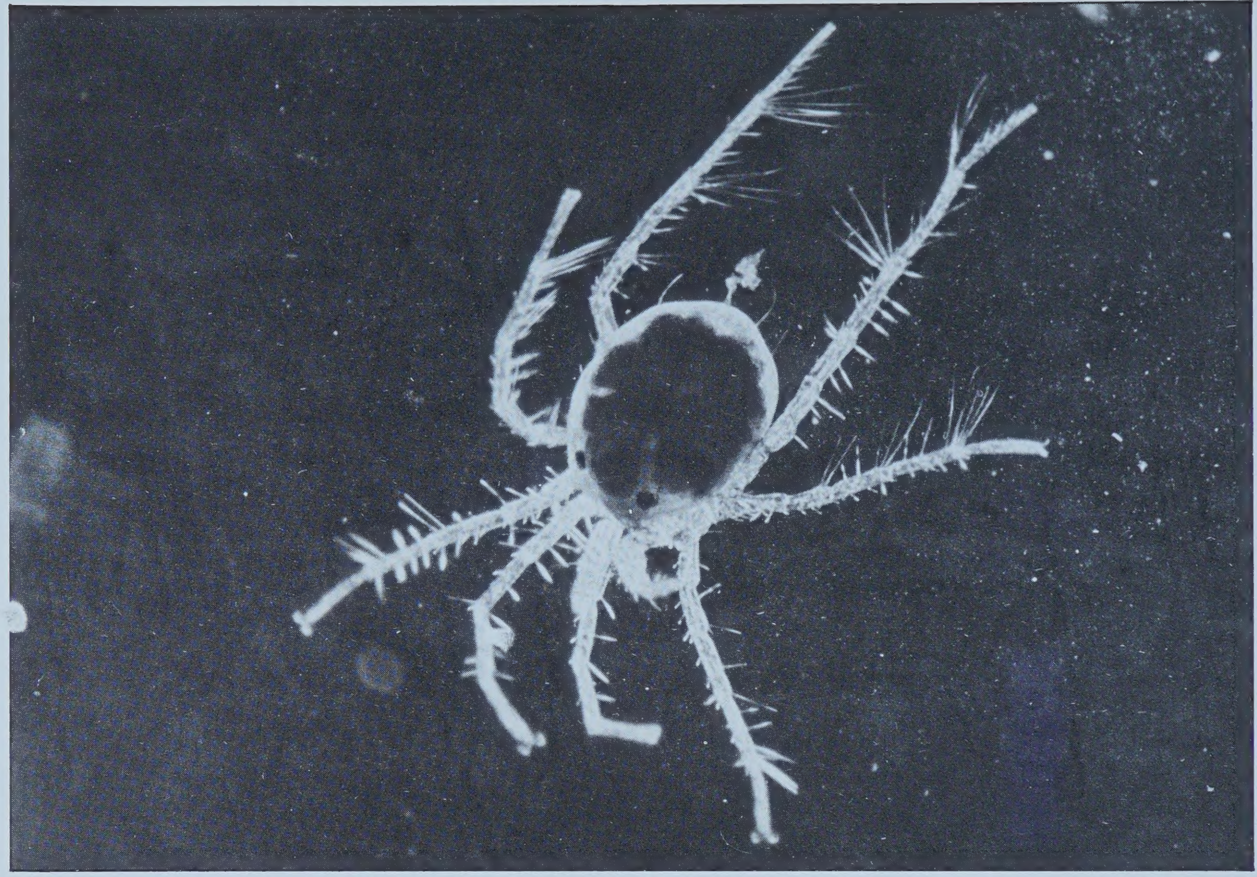
For more information, please contact: Brian W. Johns, Canadian Wildlife Service, 115 Perimeter Road, Saskatoon, Saskatchewan S7N 0X4.

DOUBLE L SADDLERY & LEATHER SHOP

SALES • SERVICE • RENTALS
ON SPECIALIZED OUTDOOR AND CAMPING EQUIPMENT FOR THE
X-COUNTRY SKIER • HIKER • BACKPACKER • HORSEPACKER • CANOEIST

Repairs on all kinds of equipment
10% discount on new equipment to Naturalist Club Members
All products personally tested

LLOYD M. LOHR
Box 1414, Stettler, Alberta T0C 2L0
Phone (403) 742-3846



Water mites *resemble small spiders because of their four pairs of legs, but differ from spiders because the body is a single mass and not segmented. All water mites are small - 0.5 to 3 mm. Many are brightly colored - red, orange, green, blue, and yellow, some having bold patterns. Most are carnivores, but a few are parasitic. They are present in most permanent bodies of water and are found among vegetation and along the bottom. Reproduction is sexual and complex. The egg hatches into a larva which parasitizes an insect host. The larva develops into a nymph which later becomes the adult. (Photo and caption by Tom Branch.)*

F.A.N. Membership Fees Are: Regular $10 per year; Supporting, $25 or more per year (with excess over $10 being deductible from your taxable income):

ENCLOSED IS $______ COVERING A ______ YEAR REGULAR MEMBERSHIP

ENCLOSED IS $______ COVERING A ______ YEAR SUPPORTING MEMBERSHIP

NAME ____

ADDRESS ____________________________________

____________________ POSTAL CODE ________________

SEND TO:
FEDERATION OF ALBERTA NATURALISTS
Box 1472, Edmonton, Alberta T5J 2N5

Tim Myres: Recipient of the 11th Loran L. Goulden Memorial Award

David M. Ealey

On January 14th, 1986, the Edmonton Natural History Club presented the eleventh Loran L. Goulden Memorial Award to Dr. M.T. Myres of the Department of Biology at the University of Calgary. The annual presentation is in memory of Loran L. Goulden who was President of the Edmonton Natural History Club when he died in an airplane accident in 1974. It is awarded in recognition of outstanding contributions to natural history in Alberta. There have been ten previous awards (see Sadler 1985), and it has become a tradition that a brief biography of the recipient should appear each year in the *Alberta Naturalist*, together with a compilation of his or her publications or writings on the natural history of the region and, if possible, an article by the individual recognized. This tradition is maintained this year, in this and accompanying articles.

This biographical sketch can be relatively brief, because it is possible to refer the reader to an earlier one that appeared in *Special Issue* No. 1 of the *Alberta Naturalist* ("The History of the Federation of Alberta Naturalists and its corporate member clubs") only five years ago (Weseloh 1981). Tim was born in 1931 in London, England, and educated in England until he came to Canada, in 1954, to pursue graduate studies at the University of British Columbia on the social displays of seaducks. He returned to England to study bird migration with radar from 1959-1962. In 1963 he arrived in Calgary, after spending one winter at what is now Lakehead University in northern Ontario.

During his career at the University of Calgary, Dr. Myres directed studies by graduate students working off the coast of British Columbia (Peregrine Falcons - R. Wayne Nelson; shearwaters - Juan R. Guzman), in Alberta (gulls - D.V. "Chip" Weseloh; grebes - Morley E. Riske; and grassland songbirds - Robin A. Owens), and Saskatchewan (shorebirds - Moray J. Lewis).

It was a deliberate decision when he arrived in Calgary that these studies should be on non-game species, which at that time were receiving wholly inadequate attention.

The citation presented to Tim Myres by ENHC recorded that "he has been a keen advocate of the contribution which amateurs can make to local natural history." All those that know Tim are aware of his ability to enlist and encourage the support of others in his projects. With this ability and his beliefs in the importance of parental influences on children's attitudes to nature and in the value of accurate recording of natural history observations, it is perhaps not surprising that he has taken such a leading role in the organization of naturalists. Specifically, in Alberta his involvement in the formation of the Federation of Alberta Naturalists in 1970 and in establishing an Alberta Ornithological Records Commitee in 1973 were significant contributions (Weseloh 1981).

M.T. (Tim) Myres. Photo: M.T. Myres

Tim's talents and motivation have had much wider influence than with organized naturalists in Alberta, however. His achievements testify to what a concerned individual can accomplish by being a catalyst and a constructive critic. For example, on arrival in Vancouver as a graduate student, Tim Myres initiated the British Columbia Nest Records Scheme, which was the first of five that now cover Canada from Pacific to Atlantic (see references for 1955-1958), and later (1967) he intervened to try and maintain the integrity of the Canadian schemes and security of the Canadian information on rarer species. Shortly after arriving in Calgary there was the "hawks and owls affair" (1965) which Tim meticulously put on record as a case history of government mismanagement and which is salutary reading still today. In 1967 he took part in an early attempt to get the Inglewood Bird Sanctuary in Calgary established as an educational nature reserve. Regarding other reserves, Tim wrote on the Eastern Slopes of the Rocky Mountains from the point of view of the biogeography of the plants and insects as well as vertebrates found there, and the directions from which they came (see references 1973, 1974). He showed the necessity of identifying and conserving localities of special biogeographic importance with rare or unusual combinations of species.

An article Tim Myres published in 1968 was one of the earliest attempts to show the importance of wildlife to Canadians and that non-game species have economic value. Tim analyzed the expenditures of members of the Calgary Bird Club and showed that naturalists spend more than sportsmen on equipment and travel in order to watch birds and study and photograph other animals and plants in a non-consumptive way. It was not until later that this was widely recognized, following more extensive national surveys in the United States and Canada. An important tool in the recognition of naturalists was the first directory of natural history, conservation and environment organizations in Canada, published by Mosquin and Myres (1970).

In 1969 and 1970 Tim Myres was one of a small group of people (that included Doug Pimlott, Ted Mosquin and Gerry McKeating) who pressed for a national organization to represent Canadian naturalists in place of the Toronto-based Canadian Audubon Society which was failing to do so (it had only about 2,000 members nation-wide). McNicholl (1985) records that several of "Myres' suggestions....were adopted", and he adds some interesting historical comments of his own about what took place at the two meetings in Winnipeg which produced the framework for the transformation of the Canadian Audubon Society into the Canadian Nature Federation. Tim Myres was one of the first national Directors of the Canadian Nature Federation (1972-1974), which under the leadership of Mosquin and Pimlott increased membership to about 20,000 within a few years. Unfortunately, it slowed after that, and Tim has for some time believed that the dynamic purpose has again been lost at this level of support.

From 1969-1971 Tim Myres was instrumental in organizing the first meetings of the Federation of Alberta Naturalists, of which he was the first President. All the provinces from Ontario to British Columbia had provincial naturalists' organizations except for Alberta, and he felt that naturalists would not have an effective voice in Alberta if the six clubs then in existence did not meet together and support an umbrella group that would speak for all of them.

In the period 1956-1960 a group of Edmonton and Calgary bird enthusiasts published an annual Alberta Bird Report. In 1976 this was followed by a book. *Alberta Birds 1961-1970, with particular reference to migration* compiled by Tom Sadler and Tim Myres from records submitted by over 200 Alberta bird observers. Martin McNicholl (1977), when reviewing this in the *Edmonton Naturalist* noted that "the literature alone makes the book worthwhile." After 1976 there was no annual compilation until the appearance of *Calgary Birds 1982* and *Calgary Birds 1983* and the appearance of an *Alberta Bird Record* which is now being published as well.

In 1981, Tim Myres summarized his feelings about FAN and natural history organization in Alberta in an article in the "History of the Federation..."; Stuart Houston in reviewing this special issue of the *Alberta Naturalist* commented: "Perhaps most valuable are the "critical reflections" of M. Tim Myres telling of the achievements, failures and problems of FAN.... Myres makes thought-provoking comments about the dangers of "commercial secrecy" of some contract studies, and is "always saddened when graduate students haven't the time to belong to the local naturalists' organization." (Houston 1982).

In the past two years during my term as president, Tim's "critical reflections" have been the single most important source of guidelines for action, particularly relating to evolution of the *Alberta Naturalist*, development of significant Annual General Meetings, and running the administration of FAN more effectively. As an organization, I feel FAN is indebted to Tim for his 9 months of labour in writing those reflections.

Among his professional research objectives, aside from waterfowl behaviour and bird migration as seen with radar, Tim Myres has devoted much time to obtaining records of the distribution of seabirds off the west coast of Canada, particularly well offshore (1969, 1979, 1983). As a graduate student he organized the collection of thrice-daily counts of birds seen from the Canadian Ocean Weather Ship at Station "Papa", 1280 km west of Victoria, B.C., and the final record was one that extended from 1958-1981 (it is now being written up).

Other significant roles that Dr. Myres has played have been as Past Editor for the Canadian Society of Wildlife and Fishery Biologists, as a member of the first executive council of the Pacific Seabird Group in 1973-1974, and as Chairman of the Canadian National Section of the International Council for Bird Preservation (1973/74; 1975/76).

As with all recipients of the Loran L.Goulden award, Tim Myres provides an outstanding example of how to make a real contribution to the conservation and appreciation of natural history in Alberta and Canada. He has used his personal and professional training in a most effective and selfless way, by encouraging others in their pursuit of natural history studies. I am sure that the greatest recognition of our debt to Tim will lie in our building upon the foundation that he has given us.

Literature Cited

Houston,C.S. 1982. (Review). The History of the Federation of Alberta Naturalists and its Corporate Member Clubs. Blue Jay 40: 175.

McNicholl, M.K. 1977. (Review). Alberta Birds 1961-1970 with particular reference to migration. T.S. Sadler and M.T. Myres.... Edmonton Naturalist 5(6): 193-195.

McNicholl, M.K. 1985. Canadian Nature Federation - a national voice for naturalists. Long Point Bird Observatory Newsletter 17(1): 3 and 6.

Sadler, T. 1985. George Freeman: recipient of the 10th Loran L. Goulden Memorial Award. Alberta Naturalist 15(1): 26.

Weseloh, D.V. (Chip). 1981. Presidents of FAN - the first ten years: M.T. Myres - President 1970/71. Alberta Naturalist, Special Issue No. 1: 71-74.

Author's Address:
3903-105 Street, Edmonton, Alberta T6J 2K7.

M.T. Myres - Writings on Natural History and Naturalists' Activities and Concerns in Western Canada and Alaska, 1955-1985

1955. A plan for the recording, by amateur observers, of biological information from breeding birds (MS, 8 pp.).

1956. British Columbia Nest Records Scheme: 2nd Annual Report (MS, 12 pp.).

1957. The British Columbia Nest Records Scheme. Condor 59: 308-310 (with I.McT.Cowan and M.D.F. Udvardy).

1957. Clutch size and laying dates in Cliff Swallow colonies. Condor 59: 311-316.

1957. A Nest Records Scheme in British Columbia. Murrelet 38: 30-31.

1957. The British Columbia Nest Records Scheme, 1957 Season. Murrelet 38: 32-35.

1957. Local publications needed. Can. Field-Nat. 71: 207-208.

1957. British Columbia Nest Records Scheme: 3rd Annual Report (MS, 14 pp.).

1958. British Columbia Nest Records Scheme: 4th Annual Report (MS, 23 pp.).

1958. The European Starling in British Columbia: 1947-1957. British Columbia Provincial Museum Occasional Papers No. 11 (60 pp.).

1958. Preliminary studies of the behavior, migration and distributional ecology of eider ducks in northern Alaska, 1958. Interim Report to the Arctic Institute of North America (under) contracts AINA-37 and ONR-224....(14 pp.).

1959. Display behavior of Bufflehead, scoters and goldeneyes at copulation. Wilson Bulletin 71: 159-168.

1959. The first record of Harris' Sparrow, *Zonotrichia querula* (Nuttall), from Alaska. Auk 76: 364-365.

1963. The display behavior of the King Eider; with a discussion of interspecific selection for reproductive isolation between the King and Common Eiders. Written under contracts AINA-37 and ONR-238 for the Arctic Institute of North America. (20 pp.).

1965. A footnote from the editor. *In* Myres, M.T. (Ed.). Canadian Society of Wildlife and Fishery Biologists, Occasional Papers No. 1.

1965. (Editor, anon.). The Hawks and Owls Affair. Calgary Bird Club, Supplement to Bulletin No. 36 (11 pp.).

1965. Gulls at sanitary landfill sites near Calgary (MS, 2 pp.).

1965. The Moose Jaw Whooping Cranes. Calgary Bird Club Bulletin No. 42: 6.

1965. Squire Waterton of Yorkshire, the South American naturalist whose name graces Waterton Lakes National Park. Radio talk presented on the Canadian Broadcasting Corporation's *Speaking Personally*, July 6, 1965 (MS, 5pp.).

1966. Western Canadian studies of bird migration by means of radar. *In* Snow, D.W. (Ed.). XIV Congressus Internationalis Ornithologicus, Abstracts pp. 87-88. (A 15 minute 16 mm. movie film of the same title was made to illustrate this).

1966. A brief on National Park Policy to the (House of Commons) Standing Committee on Northern Affairs and National Resources (with I.R. Halladay, for the Calgary Bird Club; it was presented by John Price) (MS, 7 pp.).

1967. The study of natural history. Chapt. 11 *in* Hardy, W.G. (Ed.). Alberta - a natural history. Edmonton: Hurtig (pp. 265-274).

1967. Introduction. *In* Myres, M.T. (Ed.). Canadian Society of Wildlife and Fishery Biologists, Occasional Papers No. 2.

1967. Nest Record Schemes in Canada. Can. Field-Nat. 81: 281-284.

1967. Review. The Birds of Canada, by W. Earl Godfrey. Calgary Bird Club Bulletin No. 53: 11-12.

1967. A visit to the Okanagan. Calgary Bird Club Bulletin 58:2.

1967. Field studies in the natural sciences for urban schoolchildren. A paper read to the Alberta Field Studies Council, May 27, 1967 (MS, 9 pp.).

1967. The future of Inglewood Bird Sanctuary. A brief to Consolidated Concrete Limited from a group interested in seeing Inglewood Bird Sanctuary preserved as an educational Nature Reserve (prepared for and co-authored by R.J.B. Carswell, J.B. Cragg, G.J.A. de Leeuw, M.I. Jackson, J.W. Price and Duncan Shelley) (MS, 6 pp. + 4 appendices).

1968. First record of Ruff for Alberta. Blue Jay 26: 17-21 (with B.Jones).

1968. A sample survey of the expenditures of naturalists, with a glance at the future of the Naturalists' Movement. Canadian Audubon 30: 12-20.

1969. Observations on the distribution and migration of some seabirds off the outer coasts of British Columbia and Washington State, 1946-1949. Syesis 2: 241-256 (with P.W.Martin).

1969. Uses of radar in wildlife management. Chapt. 10 *in* Giles, R.H. (Ed.). Wildlife Management Techniques. 3rd Edition. Washington, D.C.: The Wildlife Society (pp. 105-108).

1969. Ornithological studies of the western Canadian radar films. Final report to the Canadian Wildlife Service, Ottawa (MS, 35 pp.).

1969. The need for a truly representative national organization for Canadian naturalists. Can. Field-Nat. 83: 67-68.

1969. (Panelist in Session on "Measuring the Value of the National Parks"). *In* Nelson, J.G. and Scace, R.C. (Eds.). The Canadian National Parks: today and tomorrow. Conference Proceedings, pp. 400-402, 412, 414-416, 421-422, 429-430. Calgary: University of Calgary.

1970. The detection of birds and insects, and the study of bird movements, with radar (a resume with bibliography). World Conference on Bird Hazards to Aircraft, Kingston, Ontario, 1969. Proceedings: 501-519. Ottawa: National Research Council.

1970. Birds recorded at Ocean Station "Papa" (North Pacific Ocean) during a 12-year study. XV Congressus Internationalis Ornithologicus, Abstracts p. 160.

1970. Directory of Natural History, Conservation and Environment Organizations in Canada. Can. Field-Nat. 84: 75-87 (with T. Mosquin.).

1970. Introduction; (discussant); Some references to environmental problems in Alberta; Further reading on environmental problems. *In* Brookes, D.A. and Myres, M.T. (Eds). Environment 1975: pollution in Alberta. Pp. 1-3, (14, 20-21, 25-26, 31-32, 33-34, 36-37, 39-41, 46, 50-51), 55-57, 58-60. Calgary: Biological Sciences Society, University of Calgary.

1970. Can the Canadian Audubon Society become a National Union of Naturalists' Organizations? An address to the National Conference of Canadian Audubon Affiliates, Winnipeg, May 16-18, 1970 (MS, 7 pp.).

1970. A brief on the proposed Wilderness Areas Act presented on behalf of the Federation of Alberta Naturalists at a Public Meeting in Calgary, July 29, 1970 (7 pp. + 2 appendices).

1971. A Canada Goose migration through the southern interior of British Columbia. Canadian Wildlife Service Report Series No. 14: 23-34 (with S.R. Cannings).

1971. Editorial: Resource management and nature conservation in Alberta 1971-1975. Federation of Alberta Naturalists Newsletter 1(3): 32.

1971. A brief on the Provisional Master Plans for Banff, Jasper, Yoho and Kootenay National Parks. Prepared for presentation at Public Hearings in Calgary, April 19-20, 1971 (MS, 17 pp. + 1 fig. + 3 appendices, including additions of May 20, 1971).

1971. The first year of the Federation of Alberta Naturalists: report of the President to the first Annual General Meeting (MS, 8 pp.).

1972. Radar observations of three probable transoceanic migratory movements across the Gulf of Alaska in spring 1965. Syesis 5: 107-116.

1972. Club Corner (1). History of the Alberta Natural History Society. Federation of Alberta Naturalists Newsletter (Alta. Nat.) 2(1): 12-14.

1973. Effects of agriculture upon populations of native passerine birds of an Alberta fescue grassland. Can. J. Zool. 51: 697-713 (with R.A. Owens).

1973. The Biogeographic importance of the Eastern Slopes of the Rocky Mountains of Southwestern Alberta. *In* Land Use and Resource Development in the Eastern Slopes, Proceedings, Public Hearings, June-July 1973, Part IIIA: Calgary. Edmonton: Environment Conservation Authority (pp. 302-1 to 302-24 and 303-304) (with A.H. Legge).

1973. haiku: "Golden harvest lands....", "A time of suspense! ....", and "Winter here again? ...". Calgary Field Naturalist 5(4): 139.

1974. Statistics, research and habitat management. Calgary Field Naturalist 5(7): 184.

1974. haiku: "Early bird migrants...", "Alberta in spring....", and "The returning gulls....". Calgary Field Naturalist 5(8): 211.

1974. The acquisition of sense in our policies about publishing observations. Calgary Field Naturalist 6(5): 148-151.

1974. The conservation of biogeographically important localities in the eastern slopes of the Rocky Mountains of Alberta, Canada. (with A.H. Legge, D.J. Larson and R.T. Ogilvie) (Unpublished MS, 17 pp. + 6 figs).

1975. Changes in the Peregrine population and its seabird prey at Langara Island, British Columbia. *In* Murphy J.R. *et al.* (Eds). Population Status of Raptors. Raptor Research Report No. 3: 13-31 (with R.W. Nelson).

1976. Alberta Birds 1961-1970, with particular reference to migration. Provincial Museum of Alberta, Natural History Section, Occasional Paper No. 1 Edmonton: Alberta Culture (iv + 314 pp.) (with T.S. Sadler).

1976. Birds and the main weather events of the decade. *In* Alberta Birds 1961-1970 (last citation) (pp. 19-31).

1976. Reproduction (for Common and Barrow's Goldeneye) and Habitat and Reproduction (for Bufflehead), *in* Palmer, R.S. (Ed.). Handbook of North American Birds. Yale University Press, Volume 3: 385-395, 409-421, 430, 432, and 435-443 (variously with M.F. Jackson and A.J. Erskine).

1976. Declines in populations of Peregrine Falcons and their seabird prey at Langara Island, British Columbia. Condor 78: 281-293 (with R.W. Nelson).

1976-1977. Ecology and behavior of southern hemisphere shearwaters (genus *Puffinus*) and other seabirds, when over the outer continental shelf of the Bering Sea and Gulf of Alaska during the northern summer. Environmental Assessment of the Alaskan Continental Shelf, Principal Investigators' Reports. For the year ending March 1976, 3: 1-51; for the year ending March 1977, 3: 179-191 (with J. Guzman).

1978. Status designations for Alberta's birds. Draft prepared for the Avian Sub-committee, Alberta Committee on Rare and Endangered Species (MS, 23 pp.).

1979. Long-term climatic and oceanographic cycles regulating seabird distributions and numbers. U.S. Fish & Wildlife Service Wildlife Research Reports No. 11: 3-7.

1980. A review of factors influencing extralimital occurrences of Clark's Nutcracker in Canada. Can. Field-Nat. 94: 43-51 (with R.M. Fisher).

1981. Seasonal fluctuations in gull numbers at Calgary, Alberta, Canada, and a model for estimating their numbers. Colonial Waterbirds 4: 132-137 (with D.V. Weseloh).

1981. History of the Calgary Field Naturalists' Society. *In* McNicholl, M.K. (Ed.). The History of the Federation of Alberta Naturalists and its Corporate Member Clubs. Alta. Nat., Special Issue No. 1: 40-48, and 70 (with D. Stiles).

1981. Critical reflections on the organization of natural history in Alberta: ten years later. Alta. Nat. Special Issue No. 1 (last citation): 118-136.

1982. Footnote on the history of the Territorial Natural History Society (1902-1905). Alta. Nat. 12: 125.

1982. A bird-finding routes guide and bird-sighting probability chart for the Calgary region of southern Alberta. Preliminary edition. Bird Study Group, Calgary Field Naturalists' Society (Co-editor with J.B. Steeves, B. Burrows and A.N. Wiseley). (45 pp.).

1983. The occurrence of shearwaters (*Puffinus* spp.) off the west coast of Canada. Can. J. Zool. 61: 2064-2077 (with J.R. Guzman).

1983. Review: Fish and Wildlife Policy for Alberta, by Alberta Energy and Natural Resources, Fish & Wildlife Division. Alta. Nat. 13: 79-81.

1984. Viewing Wildlife. Special Review: Status of the Fish and Wildlife Resource in Alberta, by Alberta Energy and Natural Resources, Fish and Wildlife Division (ENR Departmental Working Paper No. 2, April 1984). Alta. Nat. 14: 112-116.

1984. A preliminary assessment of the likely effects of job cutbacks in the federal scientific civil service on the employment of first and higher degree graduates in the biological sciences. (A report prepared for the Department of Biology, University of Calgary) (MS, 10 pp).

1985. Programmes presented at General Meetings of the Calgary Field Naturalists' Society, 1979-1985. Pica 6(1): 12-20.

1985. A southward return migration of Painted Lady butterflies, *Vanessa cardui*, over southern Alberta in the fall of 1983, and biometeorological aspects of their outbreaks into North America and Europe. Can. Field-Nat. 99-147-155.

Thomas W. Blakiston, Charles Waterton and John George Brown, and Their Interconnected Associations with Waterton Lakes National Park, Alberta

M.T. Myres

How many Canadians, residents of western provinces, tourists or indeed naturalists, have paused to ask themselves who the individual was that Waterton Lakes National Park, in the southwestern corner of Alberta, was named for? Who was Waterton? And apart from Charles Waterton (who never visited Alberta), who were the two people who played leading roles in attaching Waterton's name to the area (Thomas W. Blakiston and John George Brown) and in having it designated as a national park? It is because all three were among the most memorable of 19th Century characters that their lives should be better known.

Blakiston (1832-1891)

When John Palliser made his celebrated expedition to the western plains of Canada from 1857-1860, one of the scientists attached to it was Lieutenant Thomas W. Blakiston of the Royal Artillery (Rodney 1950; Holmgren 1976). Blakiston was only 25 at the time, and his duties were to make magnetic observations. In 1858 he was the first man to describe the Waterton Lakes (Blakiston 1860), and he named them "after a celebrated British naturalist" (Spry 1963, p. 174). Blakiston named a number of other southern Alberta geographical features also: the Livingstone Range after David Livingstone the explorer of central Africa, and a mountain after John Gould the great artist-naturalist. Blakiston Brook, Blakiston Falls, the Blakiston Valley and the highest peak in Waterton Lakes National Park (Mt. Blakiston) bear his own name.

It was, however, birds that ultimately became the primary focus of Blakiston's writings. He published several accounts of the birds that he had observed and collected in Alberta and southeastern British Columbia (Blakiston 1861-1862, and 1863), as well as on those he had encountered in Nova Scotia earlier. Later, he explored in China (1860-1861), and then, after leaving the army, he resided in northern Japan for over twenty years (1862-1884) as a businessman. This was only shortly after Hakodate (in Hokkaido) and other ports had been opened to foreign trade in July 1859, and several years before the Meiji Restoration in 1868 opened Japan up to travel by foreigners. Blakiston proceeded to publish extensively on the birds of Japan (e.g. in *Ibis* from 1862-1887) and became the first to produce comprehensive accounts of the birds of Japan in the English language (in *Ibis* in 1878, and in the *Transactions of the Royal Asiatic Society of Japan* in 1880 and 1882), in collaboration with H. Pryer. In 1884 he published an updated account (Blakiston 1884). Blakiston left Japan in 1884 and moved to the United States where he died in 1891.

Blakiston's natural history studies while in western Canada are not as well known, apparently, as those of other members of the Palliser expedition, and he has not been much written about (Spry 1968). Recently, Haig (1980) has traced his movements in southwestern Alberta, and outlined the significance of Livingstone, Gould, Waterton and others in his story and naming of geographical features. It is unfortunate, however, that whereas Palliser, Hector, Bourgeau and others have been accorded individual biographical entries in the new *Canadian Encyclopedia* (Edmonton: Hurtig 1985), Thomas Blakiston has not been given one.

Waterton (1782-1865)

Charles Waterton was an intrepid explorer and one of the more improbable of English eccentrics. Although he paid a short visit to eastern Canada in 1824, he himself never visited western Canada. To contemporary Englishmen, such as Thomas Blakiston, "Squire" Waterton was, however, a well-known figure. He was notable for three main reasons: first, for the story of his adventures on collecting expeditions in South America, made available through his extraordinary book on his "Wanderings" (Waterton 1825, recently reissued 1985); second, for his eccentric behaviour and the strange collections that he maintained as a natural history museum at his home at Walton Hall, near Wakefield, in Yorkshire; third, for the nature sanctuary that he created around Walton Hall, including a large lake that almost surrounded the house.

I first read about this remarkable man in Aldington's (1949) biography of him. Waterton's aunt, Anne, married a planter from Demerara in what is now Guyana. Later both an uncle and his father acquired plantations there. At the age of 22, in 1804, Charles left England for South America to manage estates growing coffee, sugar and cotton. His father died the following year. In 1812 Waterton turned over the Demerara estates to relatives and embarked on the first of his South American "Wanderings". This was up the Essequibo River to obtain the paralyzing poison curare from the Indians of interior Guyana, as Waterton wanted to discover an antidote. He conducted numerous experiments with it, including artificially ventilating the lungs of a donkey that he had poisoned with it, for four hours before she revived. Waterton returned to Walton Hall in 1813. His 2nd, 3rd and 4th Wanderings followed at 3-yearly intervals, in 1816-1817, 1820-1821 and 1824, and his account of them was published only a year later. His *Essays on Natural History* (Waterton 1838, 1844 and 1857) followed, and it may be significant that the last of them appeared in the year that the Palliser expedition set out. Certainly, Blakiston was a Waterton admirer.

Waterton was a great taxidermist. All over Walton Hall, Waterton had stuffed animals on display, often bearing macabre labels because several were "combination animals" made from the parts of several species put together, the results of the Squire's skill as a taxidermist combining with a schoolboy's humour which he never outgrew. These specimens are in the care of his former school, Stonyhurst College in Lancashire. In 1982 (the bicentenary of his birth) over 800 birds and other animals from Waterton's collections were exhibited at the Wakefield Art Gallery and Museums.

Over a forty year period, from the 1820's up to his death in 1865, Waterton converted the grounds of Walton Hall into a nature sanctuary, one of the first in England. In 1829, when Waterton was 47, he married a 17-year old girl, Anne (at 4:00 a.m. in the morning), but she died in childbirth less than a year later. Only eleven years after Waterton's own death some 36 years later, his son sold Walton Hall to a man who cared nothing at all for the bird sanctuary. I heard in the 1960's that Walton Hall was then functioning as a maternity hospital.

So, the man after whom Blakiston named the Waterton Lakes in Alberta was an inveterate explorer and naturalist of South America, a skilled taxidermist and an amusing eccentric. He was respected and well-loved, and fortunately he still speaks to us through his *Wanderings* and in his letters (Irwin 1955), and we can be instructed and entertained by him through his biographers (Gosse 1940; Aldington 1949).

Brown (1839-1916)

Back in what is now Alberta, and only seven years after Blakiston's visit, John George ("Kootenai") Brown, an Irishman, also arrived in the Waterton Lakes area, in 1865. After a long and colourful career (Rodney 1969) he settled there permanently in 1877. It was Kootenai Brown who successfully campaigned for the area to be protected. First the Kootenay Lakes (Waterton Lakes) Forest Reserve was set up in 1895. In 1911 the reserve was redesignated as a national park and renamed with the name originally applied to the lakes by Thomas Blakiston, but its size was simultaneously greatly reduced (Rodney 1969, pp. 195-198). It was not until 1914 that it became a substantial size (Rodney 1969, pp. 205-208; Rodney 1985). Kootenai Brown died in 1916, and he is buried with his two Indian wives in the park.

In 1932 the park became part of the first international peace park (with Glacier National Park which adjoins it in Montana), and in 1979 Waterton Lakes National Park became the second area in Canada to be named a Biosphere Reserve. In view of the world-wide travels of the three men most intimately associated with its name and creation, these are fitting outcomes. One hopes, for example, that Japanese visitors may learn of the connection between Waterton Lakes National Park and the major contribution that Thomas Blakiston also made to Japanese ornithology (Taka-Tsukasa 1967).

Bibliography

Blakiston:

Blakiston, T.W. 1860. Report on the Exploration of the Kootenai and Boundary Passes of the Rocky Mountains in 1858. Occasional Papers of the Royal Artillery Institution No. 1: 237-254. Woolwich (U.K.).

Blakiston, T.W. 1861-1862. On birds collected and observed in the interior of British North America. Ibis 3: 314-320; 4: 3-10.

Blakiston, T.W. 1863. On the birds of the interior of British North America. Ibis 5: 39-87, 121-155.

Blakiston, T.W. 1884. Amended list of the Birds of Japan, according to geographic distribution; with notes concerning additions and corrections since January 1882. London: Taylor and Francis.

Haig, Bruce. 1980. In the footsteps of Thomas Blakiston - 1858. Lethbridge: Historic Trails Society of Alberta (57 pp.).

Holmgren, E.J. 1976. Thomas Blakiston, explorer. Alberta History (Winter 1976).

Rodney, W. 1950. Explorations of Lt. Thomas W. Blakiston. Lethbridge Herald September 15, 1950.

Taka-Tsukasa, N. 1967. The Birds of Nippon. Tokyo: Maruzen Co. Ltd.

Note: biographies or obituaries of Blakiston are to be found in Proceedings of the Royal Geographical Society 6: 121 (1862) and 13: 728-729 (1891); Auk 9: 75-76 (1892); and Ibis 34: 190-191 (1892) and Jubilee Supplement :173 (1908).

Waterton:

Aldington, R. 1949. The strange life of Charles Waterton, 1782-1865. London: Evans Brothers.

Gosse, P. 1940. The Squire of Walton Hall; the life of Charles Waterton. London: Cassell.

Irwin, R.A. (Ed.). 1955. Letters of Charles Waterton. London: Rockliff Publ. Corp.

Spry, I.M. 1963. The Palliser Expedition...1857-1860. Toronto: Macmillan.

Spry, I.M. (Ed.). 1968. Papers of the Palliser Expedition, 1857-1860. Toronto: Champlain Society.

Waterton, C. 1825. Wanderings in South America &c. (reprinted 1985 by Century Publishing of London in their Century Travellers series).

Waterton, C. 1838, 1844, and 1857. Essays on Natural History. First, Second and Third Series (in 1870 Norman Moore published a collected edition of Waterton's Essays).

Brown:

Rodney, W. 1969. Kootenai Brown, his life and times, 1839-1916. Sydney, B.C.: Gray's Publishing Ltd.

Rodney, W. 1985. John George Brown. pp. 232-233 *in* The Canadian Encyclopedia, Vol. 1. Edmonton: Hurtig.

Author's Address:
Dept. of Biology, Univ. of Calgary, Calgary, Alberta T2N 1N4.

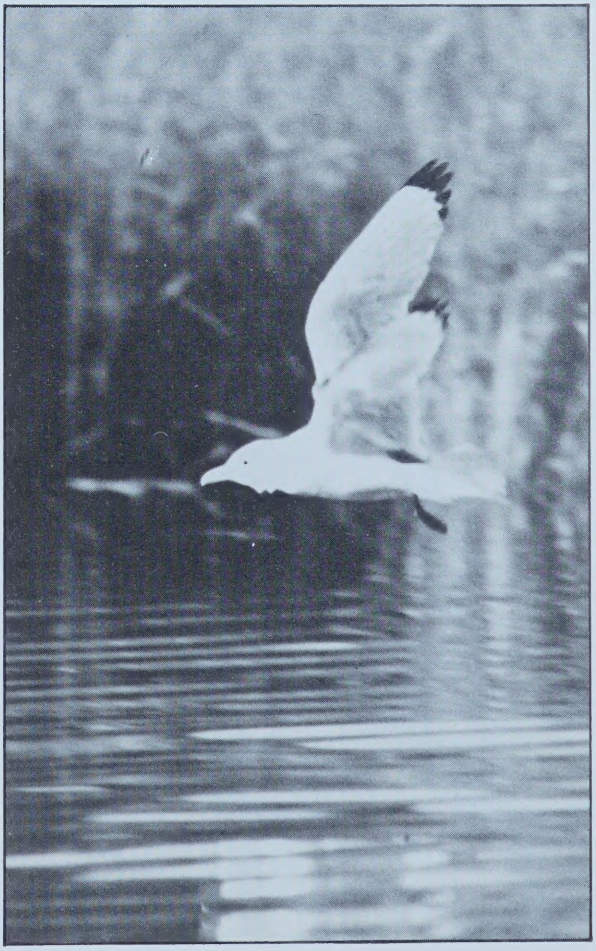
Black-Legged Kittiwake in Jasper National Park, Alberta

D.M. Connelly

The Black-legged Kittiwake is a maritime gull rarely found inland in the northern hemisphere. It feeds on small fishes, molluscs, crustaceans and other oceanic plankton. It nests on high cliffs overlooking the sea. The kittiwake is circumpolar and migrates down the coasts of North America to Baja California on the west and the Bermuda Islands on the east (Terres 1980). Its appearance in the Rocky Mountains is unusual (Smith and Kuyt 1983).

On October 11, 1983, Mr. James W. Bee observed a Black-legged Kittiwake on Honeymoon Lake in Jasper National Park. On October 12, 1983, the bird was found dead on the shoreline and the

Black-legged Kittiwake, Mildred Lake, Jasper National Park. Photo: Terry Willis



specimen was sent to the Edmonton provincial museum for confirmation of identification. This became the first sighting of this species in the Rocky Mountains of Alberta.

On July 19, 1984, another sighting was made in Jasper National Park. Mr. Clayton Truman and myself observed the bird on Mildred Lake. Over the next two weeks Parks Canada staff observed and photographed the bird on the lake. The all yellow bill, black wing tips and black legs were used to identify the bird. On August 21, I discovered the remains of a gull with a yellow bill on the shore of Mildred Lake and the Kittiwake was seen no more. A sure identification of the dead bird was difficult, however, because of the lack of body parts. The photograph however, shows most of the key identifiers.

Terres (1980) notes that the Black-legged Kittiwake "drinks salt water exclusively and that captives refused fresh water." I believe the bird may have died of a salt imbalance.

Smith and Kuyt (1983) postulated that inexperienced kittiwakes are carried inland by low pressure systems moving out of the north Pacific. If so, the possibility remains that there will be more sightings of Black-legged Kittiwakes in the Rockies.

Literature Cited

Terres, J.K. 1980. The Audubon Society Encyclopedia of North American Birds. Alfred A. Knopf, New York.

Smith, A.R. and E. Kuyt. 1983. Occurrences of the Black-legged Kittiwake, *Rissa tridactyla*, in the Prairie Provinces and North-central United States. Can. Field-Nat. 97(1):111-113.

Author's Address:
Parks Canada, Box 10, Jasper, Alberta T0E 1E0.

A Bluebird Hat Trick in Alberta

Dave Elphinstone

In 1984, I received a phone call on the City of Calgary Wildlife Information Line from a landowner southwest of Calgary who reported two pair of Western Bluebirds nesting on his property (see *Alta. Nat.* 14(3):97-98). These birds produced a total of 22 young, all of which were fledged. This was not only the first record of breeding but also the first material evidence of these birds in Alberta.

Male Mountain Bluebird. Photo: Edgar T. Jones

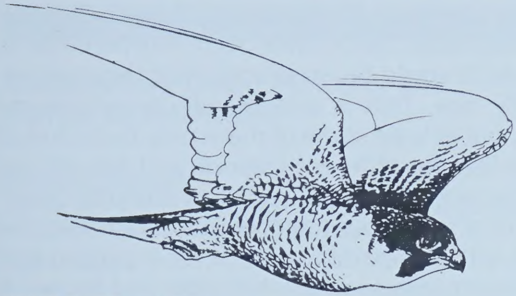
On March 17, 1985, I received a report from the landowner (who wishes to remain anonymous) that a male Western Bluebird had returned to last year's nesting ground. Neither this bird nor any other were seen after that date. A snow storm shortly after March 17th was assumed to be the culprit. Searches were made throughout the summer of all his nestboxes and in neighbouring fields. Each flying bird was watched eagerly.

On August 29, 1985, I received another phone call from the landowner reporting Western Bluebirds, Eastern Bluebirds, and Mountain Bluebirds all in the same field. Very quickly I arrived at the location and after much searching, found an adult and three young Western Bluebirds. I had difficulty finding an Eastern Bluebird until an unmistakable adult male came and landed on a fence nearby. The landowner had reported more Eastern Bluebirds, but I could only find this one. The group of Westerns soon perched about 9 m away and we had a good view of all three species close together. There were also about 75 Mountain Bluebirds and about 40 that I could not identify.

As far as I know, this is the first record in Canada in recent history where all species have been seen together. It is suspected that the Western Bluebird may have nested in a wild location.

Author's Address:
219 Northmount Drive N.W., Calgary, Alberta T2K 3G6.

NATURALISTS BOOKSHELF



Wild Hunters

Adventures with wolves, foxes, eagles and falcons based on 25 years of field observation. Dick Dekker. 1985. Canadian Wolf Defenders, Edmonton. 224 pp. With 46 black and white photographs and a dozen line drawings. $12.00 paper.

This little paperback is easily read and the author successfully transfers the reader to the fields, hills and mountains to view a series of natural history events that he vividly recollects and describes for a pleasurable reading experience. The artistic talents of the author are reflected in his sketches and his astute and sensitive descriptions of the actions and reactions to the predatory creatures that collectively intrigue him. In describing a fox that was pouncing for mice he said, "The animal jumped with such rakish grace that I felt inclined to applaud." And while watching sandpipers in peregrine country he writes, "As I sit quietly against a rock, the birds move close and are all around, their trust and closeness generating joy. While I marvel at the details of their plumage, my ears are attuned to their conversation. I try to share their excitement and their fears. When they cock their heads and watch the sky, crouching motionless, I hunch my shoulders in apprehension." And then he describes the flight of the peregrine, "They come down in mile-long stoops and fall among flocks of sandpipers like a bursting shell."

The 26 short chapters include interesting historic and factual gems on fluctuating populations, on inter and intraspecific strife, hunting tactics and food habits of the Alberta canids and several raptorial birds. The author has made opportunistic use of his time and observation skills to document several hundred hunting forays of peregrines and merlins which have provided some interesting facts on hunting success relating to skill with age and the motivation of adults with nestlings to feed.

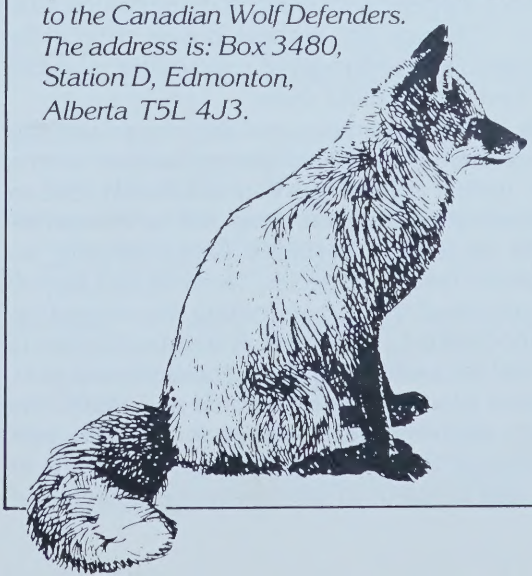
Appropriately, in a book that presents the life and times of animals at the top of the food chain, it concludes with some views on the controversial issue of the role of wolf predation and wolf control or wolf 'management'. Unfortunately, in making his case on the dire consequences of the prolonged absence of large predators, the author suggests that a pneumonia die-off in bighorns in southern B.C. and the southwest corner of Alberta in 1983 "did not spread to ranges to the north where large predators are common", when in fact, cougars and coyotes are quite common throughout the southern bighorn sheep range and wolves are uncommon for at least another 100 miles north of the die-off area. In retrospect the northern spread of the bighorn die-off appears to have been thwarted by forest barriers that prevented the interchange of diseased animals with healthy herds immediately to the north.

The final chapter is a reasonable plea for a practical compromise between the professional wildlife managers and the needs and wishes of the various parties concerned when it comes to altering the numbers of wolves and ungulates in Alberta, particularly in areas adjacent to the National Parks.

Anyone interested in the pulse of wildlife in an Alberta setting will enjoy this book.

Wm. Wishart

Wild Hunters can be ordered by sending a cheque for $12. marked "Wild Hunters", payable to the Canadian Wolf Defenders.
The address is: Box 3480,
Station D, Edmonton,
Alberta T5L 4J3.



The Rare Vascular Plants of British Columbia

Gerald B. Straley, Roy L. Taylor and George W. Douglas. 1985. Syllogeus No. 59. National Museum of Natural Sciences, Ottawa K1A 0M8. 165 pp. Free.

This is another in an excellent series on the rare plants of Canada's provinces and territories. Alberta naturalists should be particularly interested in this and comparable studies which have already been completed for Alberta (Argus and White 1978, Packer and Bradley 1984), the Yukon Territory (Douglas, Argus, Dickson and Brunton 1981), the continental Northwest Territories (Cody 1979), and Saskatchewan (Maher, Argus, Harms and Hudson 1979).

In their introduction, the authors discuss endemism and note phytogeographical characteristics of the flora, define special terms, and outline their method of treatment. This is followed by a useful description of areas especially rich in plant taxa including rare species.

The authors have added a very useful refinement to the categorization of rare taxa, recognizing four subgroups:

R1 - single or few populations, composed of few plants.
R2 - several populations, locally common.
R3 - widespread or scattered populations with small numbers of plants.
R4 - restricted distribution, large populations.

It is unfortunate that these subclasses do not take into account endemism as they do abundance and distribution, for all three factors are of obvious importance to the development of conservation strategies. Although the authors define criteria for threatened and endangered species designation, they have not applied them.

The 816 taxon entries and dot maps form the bulk of the report. Although the number seems large, further collecting will undoubtedly lead to the elimination of several taxa and for now an inclusive list is most desirable. Quite sensibly, infraspecific taxa (subspecies, varieties and forms) are considered, thereby permitting the recognition of important B.C. endemics. A standard format is adopted for each entry, noting herbaria and publications which provided records and maps, the taxon's entire range, its range in B.C., the biogeoclimatic zones and habitat types it prefers in B.C., and its status in other provinces, states and countries (including the U.S.S.R.). Dot maps are provided for each taxon in categories R1 and R2 only.

Several of the taxa considered rare in B.C. have also been deemed rare in Alberta by either Argus and White (1978) or Packer and Bradley (1984) (eg. *Carex geyeri, Calochortus apiculatus, Xerophyllum tenax, Arenaria nuttallii, Epilobium glaberrimum, Angelica dawsonii, Osmorhiza occidentalis, Penstemon albertinus, P. eriantherus, P. lyallii, Senecio megacephalus*). Since these occur nowhere else in Canada, it could be concluded that they are nationally rare. This is undoubtedly true in many cases, but at least some of them may be included in two lists for different reasons and are not nationally rare. The last decade has seen the development of numerous regional lists of rare vascular plants with comparable criteria for inclusion and it is time to consider how Kershaw and Morton's 1978 preliminary list of nationally rare taxa should be updated.

The book may be rather dry bedtime reading, but it accomplishes its goal of providing a reference work on the rare vascular plants of our western neighbour. It is remarkably free of mistakes, although the publishers provide an incomplete list of previous titles in the Rare Plants series. The authors have followed the well organized format of previous publications in this series. As such, it is a useful (and free) addition to any Alberta naturalist's library.

M. Fairbarns

*Bear Grass (*Xerophyllum tenax*) is considered rare in both Alberta and B.C.* Photo: J.D. Johnson

Recent Publications on the Natural History of Alberta

Compiled by David M. Ealey and Martin K. McNicholl

Natural History

Jackson, M. and M. Jackson. 1985. A trip to the Cold Lake region. Pica 6(1):26-28.

Naturalists

Anonymous. 1985. The Harkin Award. Michael J. Noland, Newfoundland/Charles Sauriol, Ontario/ George W. Scotter, Alberta. Park News 21(3):26-28.

Fraser, J.K. 1985-1986. New 'dinosaur museum' commemorates name of exceptional Canadian scientist and explorer. Can. Geogr. 105(6):6. - Joseph Burr Tyrrell.

Jalkotzy, P. and G. Holroyd (eds.). 1985. Directory of cooperative naturalists' projects in Alberta: a guide to volunteers for 1985. Can. Wildl. Serv., Edmonton. 8 pp.

Johnson, M.E. 1985. A club with vision: the Alpine Club of Canada and conservation 1906-1980. Park News 21(3):6-10.

Geology

Burwash, R.A., J. Krupicka, A.R. Basu, and P.A. Wagner. 1985. Resetting of Nd and Sr whole-rock isochrons from polymetamorphic granulites, northeastern Alberta. Can. J. Earth Sci. 22(7):992-1000.

Gardner, J.S. and N.K. Jones. 1985. Evidence for a Neoglacial advance of the Boundary Glacier, Banff National Park, Alberta. Can. J. Earth Sci. 22(11): 1753-1755.

Langenberg, W. 1985. The geometry of folded and thrusted rocks in the Rocky Mountain Foothills near Grande Cache, Alberta. Can. J. Earth Sci. 22(11):1711-1719.

Osborn, G. 1985. Holocene tephrostratigraphy and glacial fluctuations in Waterton Lakes and Glacier national parks, Alberta and Montana. Can. J. Earth Sci. 22(7):1093-1101.

Soils

Christie, H.W., D.N. Graveland, and C.J. Palmer. 1985. Soil and subsoil moisture accumulation due to dryland agriculture in southern Alberta. Can. J. Soil Sci. 65(4): 805-810.

Water

Baker, B.L. and S.A. Telang. 1985. Abundance of oxygen and organics in the Red Deer River: comparison with Marmot Basin streams. Can. Water Resources J. 10(2):19-27.

Bierhuizen, J.F.H. and E.E. Prepas. 1985. Relationship between nutrients, dominant ions, and phytoplankton standing crop in prairie saline lakes. Can. J. Fish. Aquat. Sci. 42(10):1588-1594.

Gehrels, J. 1985. An overview of the potential impacts of demand management on water use: the southern Alberta situation. Can. Water Resources J. 10(4):45-53.

Tacail, F. and P. Duffy. 1985. Rehabilitation of LNID Diversion headworks in southern Alberta. Can. Water Resources J. 10(1):21-31.

Climate

Grace, B. and D.L. Johnson. 1985. The drought of 1984 in southern Alberta: Its severity and effects. Can. Water Resources J. 10(2):28-38.

Paleontology

Critchfield, W.B. 1985. The late Quaternary history of lodgepole and jack pines. Can. J. For. Res. 15(5):749-772.

Currie, P.J. 1985. Cranial anatomy of *Stenonychosaurus inequalis* (Saurischia, Teropoda) and its bearing on the origin of birds. Can. J. Earth Sci. 22:1643-1658.

Neuman, A.G. and M.V.H. Wilson. 1985. A fossil fish of the family Saurichthyidae from the Lower Jurassic of western Alberta, Canada. Can. J. Earth Sci. 22(8):1158-1162.

Zwarun, S. 1985-1986. Dinosaurs galore. Can. Geogr. 105(6):46-55.

Vascular Plants

Hallworth, B. 1985. The Hare Figwort: rescue operation. Pica 6(1):29-30.

Trees

Bella, I.E. 1985. Western gall rust and insect leader damage in relation to tree size in young lodgepole pine in Alberta. Can. J. For. Res. 15(5):1008-1010.

Invertebrates

Chiykowski, L.N. and K.G.A. Hamilton. 1985. *Elymana sulpurella* (Zetterstedt): Biology, taxonomy, and relatives in North America (Rhynchota: Homoptera: Cicadellidae). Can. Ent. 117(12):1545-1558.

Hilton, D.F.J. 1985. Dragonflies (Odonata) of Cypress Hills Provincial Park, Alberta and their biogeographic significance. Can. Ent. 117(9):1127-1136.

Pinel, H.W. and N.G. Kondla. 1985. Skippers and butterflies of the Police Coulee area, Alberta. Blue Jay 43(4):213-223.

Sarazin, M.J. 1985. Primary types of Braconidae (Hymenoptera) in the Canadian National Collection. Can. Ent. 117(10):1177-1222.

Schaber, B.D. 1985. Observations on nesting behavior and turret construction by *Odynerus dilectus* (Hymenoptera: Eumenidae). Can. Ent. 117(9): 1159-1161.

Smetana, A. 1985. Revision of the subfamily Helophorinae of the Nearctic region (Coleoptera: Hydrophilidae). Mem. Entom. Soc. Can. No. 131. 154 pp.

Wong, H.R., J.A. Drouin, and C.L. Rentz. 1985. *Petrova albicapitana* (Busck) and *P. metallica* (Busck) (Lepidoptera: Tortricidae) in *Pinus contorta* Dougl. stands of Alberta. Can. Entom. 117(12):1463-1470.

Parasites

Richards, K.W. 1985. Detection of a chalkboard fungus, *Ascosphaera aggregata*, in larvae of the alfalfa leafcutter bee (Hymenoptera: Megachilidae) from western Canada. Can. Ent. 117(9):1143-1145.

Whitfield, G.H. and K.W. Richards. 1985. Influence of temperature on survival and rate of development of *Pteromalus venustus* (Hymenoptera: Pteromalidae), a parasite of the alfalfa leaf cutter bee (Hymenoptera: Megachilidae). Can. Ent. 117(7):811-818.

Fishes

Campbell, R.R. 1985. Rare and endangered fishes and marine mammals of Canada: COSEWIC Fish and Marine Mammals Subcommittee status reports: II. Can. Field-Nat. 99:404-408.

Birds

Anonymous. 1985. A B.R.I.D. agreement. In southern Alberta, the "duck boys" and the farmers work together. Ducks Unlimited Canada Conservator 6(4):7-9.

Balph, M.H. 1984. Significant encounters - II. Passerines. North Amer. Bird Bander 9(1):15. - includes 2 Alta. Tree Swallow returns.

Balph, M.H. 1984. Significant encounters. North Amer. Bird Bander 9(3):12. - Ariz. banded White-cr. Sparrow recovered in Alta.

Bennett, G. 1985. More about Pembroke swallows. Birdfinding in Canada 5(2):17. - including thousands of Cliff Swallows in southwestern Alta.

Bennett, G. 1985. Great Canadian round-up - fall brand. Birdfinding in Canada 5(6):5-10.

Bennett, G. 1985. What's happening. Birdfinding in Canada 5(6):14-17.

Bennett, G. 1985. Aliens, rarities, stragglers & strays. Birdfinding in Canada 5(6):17-20.

Clay, R.T. and J.W. Nelson. 1985. Waterfowl and forage production of backflooded hay meadows in western Canada. Program & Abstracts. First Combined Meeting of the Colonial Waterbird Group and the Pacific Seabird Group:24. (abstract only).

Collister, D. (ed.). 1985. The birds of the Calgary area 1983. Calgary Field Nat. Soc. 65 pp.

Collister, D. 1985. Summer 1985 - highlights. Alta. Bird Record 3:75-91.

Davidson, G. 1985. The Alberta report. Birdfinding in Canada 5(6):1-3.

Dekker, D. 1985. Hunting behaviour of Golden Eagle, *Aquila chrysaetos*, migrating in southwestern Alta. Can. Field-Nat. 99(3):383-385.

Force M. 1986. More Alberta birding. Birdfinding in Canada. 6(1):12.

Gollop, J.B. 1985. The spring migration. March 1-May 31, 1985. Prairie Provinces region. Amer. Birds 39(3):315-317.

Hill, B.G. and M.R. Lein. 1985. The non-song vocal repertoire of the White-crowned Sparrow. Condor 87:327-335.

Hochbaum, G.S. 1985. Variable versus stable regulatory policies for harvesting waterfowl in prairie Canada: a review of concepts. Can. Wildl. Serv. Progress Notes No. 153. 7 pp.

McGillivray, W.B. 1985. Size, sexual size dimorphism, and their measurement in Great Horned Owls in Alberta. Can. J. Zool. 63(10):2364-2372.

Monroe, B.L. Jr. 1985. Summary of highest counts of individuals for Canada and the U.S. Amer. Birds 39(4):827-831. -Gray Jay-Wildl. Res. West. Can.

Monroe, B.L. Jr. 1985. Summary of highest counts of individuals for Canada. Amer. Birds 39(4):832-834.

Oliphant, L.W. 1985. North American Merlins. Raptor Res. 19:37-41.

Siddle, C. 1986. More Alberta birding. Birdfinding in Canada 6(1):12,15.

Steeves, J.B. and M.B. Steeves. 1985. A five-year shorebird migration study at Calgary, Alberta. Alta. Bird Record 3:64-71.

Talavia, S. 1985. Some October-November bird sightings. Edmonton Bird Club Newsletter. Dec. 1985:7.

Walker, K. 1986. Spectacles: Greater Sandhill Cranes. Birdfinding in Canada 6(1):4-5.

Wallace, E.R. 1985. Bird sightings. Edmonton Bird Club Newsletter March 1985:3.

Wallace, E.R. 1985. Bird sightings. Edmonton Bird Club Newsletter November 1985:3-4.

Weber, W.C. and R.J. Cannings. 1985. The Eighty-fifth Christmas Bird Count. Western and Northern Canada. Amer. Birds 39(4):392-394. Separate counts were: 133. Banff-Canmore; 134. Calgary; 135. Edmonton; 136. Elk Island Nat'l Parks; 137. Fort McMurray; 138. Horseshoe Canyon; 139. Jasper; 140. Kananaskis Valley; 141. Medicine Hat; 142. Peace River - Grimshaw; 143. Stettler; 144. The Snake's Head; 145. Wabamun Lake; 146. Wildlife Reserve of Western Canada.

Wiseley A.N. 1985. Birdwatching basics. Alta. Bird Record 3:72-75.

Mammals

Davis, L.S. and J.O. Murie. 1985. Male territoriality and the mating system of Richardson's ground squirrels (*Spermophilus richardsonii*). J. Mamm. 66(2):268-279.

Johnson, W.A. and A.W. Todd. 1985. Fisher, *Martes pennanti*, behavior in proximity to human activity. Can. Field-Nat. 99:367-369.

Levenson, H., R.S. Hoffman, C.F. Nadler, L. Deutsch, and S.D. Freeman. 1985. Systematics of the Holarctic chipmunks (*Tamias*). J. Mamm. 66(2):219-242.

Michener, G.R. 1985. Chronology of reproductive events for female Richardson's ground squirrels. J. Mamm. 66(2):280-288.

Zammuto, R.M. and J.S. Millar. 1985. A consideration of bet-hedging in *Spermophilus columbianus*. J. Mamm. 66(4):652-660.

Development/Environmental Problems

Kulshestha, S.N., K.D. Russell, G. Ayers, and B.C. Palmer. 1985. Economic impacts of irrigation development in Alberta upon the provincial and Canadian economy. Can. Water Resources J. 10(2):1-10.

CAMROSE LUTHERAN COLLEGE
LIBRARY
JUN 22 1986

ALBERTA NATURALIST

Volume 16, Number 2, Summer 1986.

Portrait of a black wolf. See wolf articles on pages 65-68.

Photo: Tom Branch

ALBERTA NATURALIST
Volume 16, Number 2, June 1986.
Published quarterly by the Federation of Alberta Naturalists
Box 1472, Edmonton, Alberta T5J 2N5

CONTENTS

Some Observations on the Behaviour of Swift Foxes in Reintroduction Programs within the Canadian Prairies.
L.N. Carbyn 37

The 1985 May Species Count of Birds
Allen N. Wiseley 42

FAN News, Club News, Notes and News, Announcements 48-59

Arctic Loon Nesting in Alberta.
Ernie Kuyt and J. Paul Goossen 61

Evaluation of Wolf-Ungulate Predation near Nordegg, Alberta
Reviewed by Dick Dekker 65

"Dogged" Pursuits of Deer by Lone Wolves.
Dick Dekker 67

Summary of C.W.S. Whooping Crane Studies for 1985.
Ernie Kuyt and J. Paul Goossen 68

N.W.T. Studies on Gyrfalcon - The Falcon of Royalty.
Cathy Stephenson 69

Naturalists' Bookshelf

Wildflower: Canada's National Magazine of Wild Flora.
Reviewed by D. Fabijan 70

Pioneer Naturalists of the Rocky Mountains and The Selkirks.
Reviewed by Pat Clayton 71

Recent Publications on the Natural History of Alberta 72

The Alberta Naturalist is published quarterly by the Federation of Alberta Naturalists. Special issues may be published from time to time. Any material printed for the first time in the AN may be reproduced without permission; credit lines will be appreciated. All opinions expressed are those of the authors concerned and, except where stated, do not represent official F.A.N. policy.

ADVICE TO CONTRIBUTORS

Items for publication should be addressed to the Editor at the address below. Deadlines for submission of material for regular issues are: January 1, April 1, July 1, and October 1. All material submitted for publication must be typed, double-spaced, preferably on 8½"x11" paper. Maps, charts, and graphs should be submitted in "camera-ready" form if possible. Photographs accompanying an article should be submitted in the form of black and white prints on glossy paper. (Prints can be made from supplied colour slides or negatives if necessary.) Illustrative material will be returned on request. The author's name and a complete mailing address must be provided with the submission of material. Contributors should be aware that articles of a technical nature and those involving the sightings of rare species, range extensions, out of season records, etc. may be sent out for peer review. A complimentary copy of the issue in which a submission appears will be sent to authors. Information on advertising rates may be obtained from the Editor at the FAN Box No.

DEADLINES for FAN project reports are: *Alberta Christmas Bird Counts,* January 30, Andrew Slater, 22 Hillgrove Dr. S.W., Calgary, AB. T2V 3L6; *May Species Count - Plants,* July 15, J. Derek Johnson, Northern Forestry Centre, 5320 - 122 St., Edmonton, AB. T6H 3S5; *May Species Count - Birds and Mammals,* July 15, Al Wiseley, 202 - 635 - 56 Ave. S.W., Calgary, AB. T2V 0G9. Compiler cooperation is greatly appreciated.

Editor: Derek Johnson,
7109 - 106 St., Edmonton, Alberta T6E 4V5.
Telephones: 436-8231 home, 435-7306 work.
Assistant Editors: Dick Dekker, David M. Ealey

Typesetting: Typeplus Typographers Ltd.
Graphic Design and assembly: Dick Dekker
Printing: Europe Offset Ltd.

The costs of printing the Alberta Naturalist are partially supported by grant funds through the Periodical Publication Assistance program of Alberta Culture. The Federation of Alberta Naturalists gratefully acknowledges this support.

ISSN 0318-5440. Postage paid at Edmonton, Alberta under Second Class Mail Registration No. 3604.

Some Observations on the Behaviour of Swift Foxes in Reintroduction Programs within the Canadian Prairies

L.N. Carbyn

The swift fox is the smallest of North America's wild canids. This swift-footed little carnivore was once an inhabitant of the Canadian Great Plains Region. Before the 1900s its range extended from somewhere along the Manitoba/Saskatchewan border (exact distribution is not clear) through southern Saskatchewan and southern Alberta, as far west as the foothills of the Rocky Mountains. The last museum specimen in Canada was collected at Govenlock, Saskatchewan in 1928 (Rand 1948). Its final demise appears to have coincided with a period generally known as the "dirty thirties", a period of drought. The Committee on the Status of Endangered Wildlife in Canada in 1978 formally designated the swift fox as extirpated in Canada, that is, no longer to be found in this country although the species still exists in the wild in the United States.

The disappearance of the swift fox from Canada has been attributed largely to loss of habitat (Russell and Scotter 1984) and to poisoning campaigns directed at coyotes and wolves, where foxes became the innocent victims (Herrero 1984; Russell and Scotter 1984). Poisoning may not have been the only cause. For example, an animal very closely related to the swift fox, the kit fox, may actually have increased in areas of intensive coyote control with 1080 poisons (Egoscue 1956, 1962; Robinson 1953, 1961; Linhart and Robinson 1972). An experienced predator control officer from Texas observed that in areas of the southern United States, the kit foxes increased sharply when poison was used to control coyotes (R. McBride, pers. comm.). Settlers used strychnine; there is no information that I am aware of which compares the effects and toxicity of 1080 versus strychnine on swift foxes. Toxicity may not be as important as the availability of the poison. For example, widely scattered placement of poison bait stations would have less effect on smaller predators with more restricted home ranges than on larger predators with larger home ranges. The evidence on the effects of poisons on swift foxes in the past is not clear-cut and the issue is still open for debate.

Diseases such as distemper or rabies are known to affect canids (Carbyn 1982a), and when this is superimposed on food shortages, could have influenced fox survival. Further, we cannot rule out the synergistic effects of human-caused changes in the environment with natural events such as severe winters and diseases.

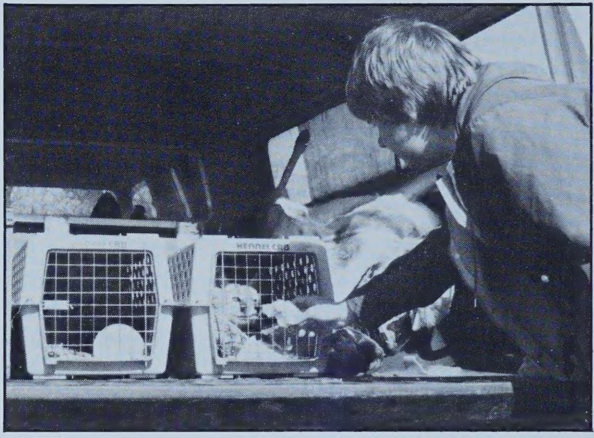
The loss of wolves on the prairies around the turn of the century probably encouraged increases in coyote numbers. Coyotes are aggressive, medium-sized predators that are known to interact with both red and swift foxes. For example, Dekker (1983) suggested that coyotes influence red fox abundance and distribution in central Alberta. Similarly, although no outright aggression was observed by Voigt and Earle (1983) in Ontario, they have shown that radio-collared red foxes avoided coyotes. Coyotes, therefore, may influence the red fox populations in some areas. Coyotes and bobcat are known to kill swift foxes (Egoscue 1979; Scott-Brown and Herrero 1985; C. Mamo, pers. comm.) and therefore, have a direct impact on the species. The impact may also extend to food competition, that is, coyotes and foxes may compete for a favorite prey species. Furthermore, wolves are not only known to kill coyotes (Carbyn 1982b), but they also at one time undoubtedly provided carrion for foxes. With a loss of wolves, the amount of available carrion probably was also reduced. In severe winters limited food supplies may be more damaging to northern foxes than those existing further south. This may explain why swift foxes have survived in southern regions while they became extirpated in the northern ones. At this stage we can only speculate, and clearly research is required to better understand these north/south differences. For whatever reasons, the loss of swift foxes from the Canadian Great Plains has left a void which impoverishes the faunal element in an important ecosystem.

The idea of reintroducing the swift fox into its original environment began with Miles Smeeton and his late wife, Beryl (Herrero *et al.* 1986). In 1973 they imported two pairs of foxes from the United States and held the animals in captivity at their wildlife reserve near Cochrane, Alberta. Stephen Herrero, Jo-Anne Reynolds and Richard Russell (University of Calgary and the Canadian Wildlife Service) pioneered the techniques for reintroduction which culminated in releases near Manyberries, Alberta in 1983, 1984 and 1985, and releases near Consul, Saskatchewan in 1984 and 1985. The questions these releases raise are numerous. Have conditions changed from earlier times so that released animals can now survive and prosper? Can we sort out the factors that ultimately contribute to the survival, establishment, or loss of the animals? Predation by coyotes on released foxes is to date the most important mortality factor (Scott-Brown and Herrero 1985). The obvious question is how can foxes avoid predation? Can foxes become reestablished in areas with high coyote densities, and does this require "swamping" an area with many released foxes, so that winning "personalities" can find ways to escape predators and form the core for a recolonizing nucleus?

An answer to these questions will emerge only over time. We do know that the biological principle of competitive exclusion can vary. For example, "fugitive" species are those species which can be excluded from some areas because of interspecific competition, but persist in others because of specific behavioural adaptations that have survival value to local conditions (Hutchinson 1951). From this perspective it would appear advisable to release animals at a number of different locations. Maximum diversity of genetic backgrounds within the same population may be required for natural selection to single out the "winning" combinations that have the highest chance of survival.

Swift foxes may learn to escape coyotes for most seasons of the year, however, if winter food shortage is a problem, they may not be able to survive if this is a limiting factor. If available food is variable enough, a widely distributed fox population will be able to survive in a mosaic of habitats where sufficient food is available.

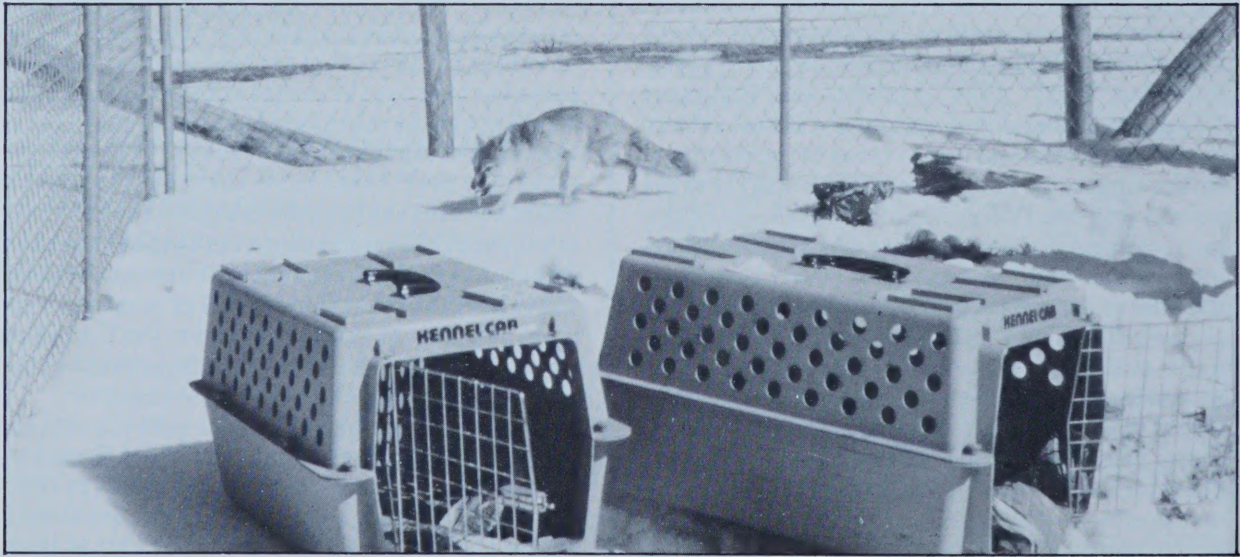
How does individual variability help in survival? In this note I describe observations in an attempt



After travelling in the back of a pickup truck, swift fox responses to feeding varied. Fox A showed no fear, while fox B was retiring and remained in the rear of the portable kennel cage.

Once released in pens, fox A explored the perimeter and cached food while fox B escaped into a burrow.

Photos: L.N. Carbyn (CWS).



to discuss individual fitness that may lead to survival. It is intended to further stimulate debate on the subject. The observations pertain to the behaviour of two male foxes transported from Cochrane to Consul 10-12 March 1985. There was a marked difference in their "personalities". This is not a new observation for wild canids held in captivity. Rutter and Pimlott (1968), for example, described in detail how wolf personalities differ greatly. In view of the fact that mortality of newly released foxes is so high, we can speculate as to what type of fox personality has the greatest survival value.

Behavioural Differences

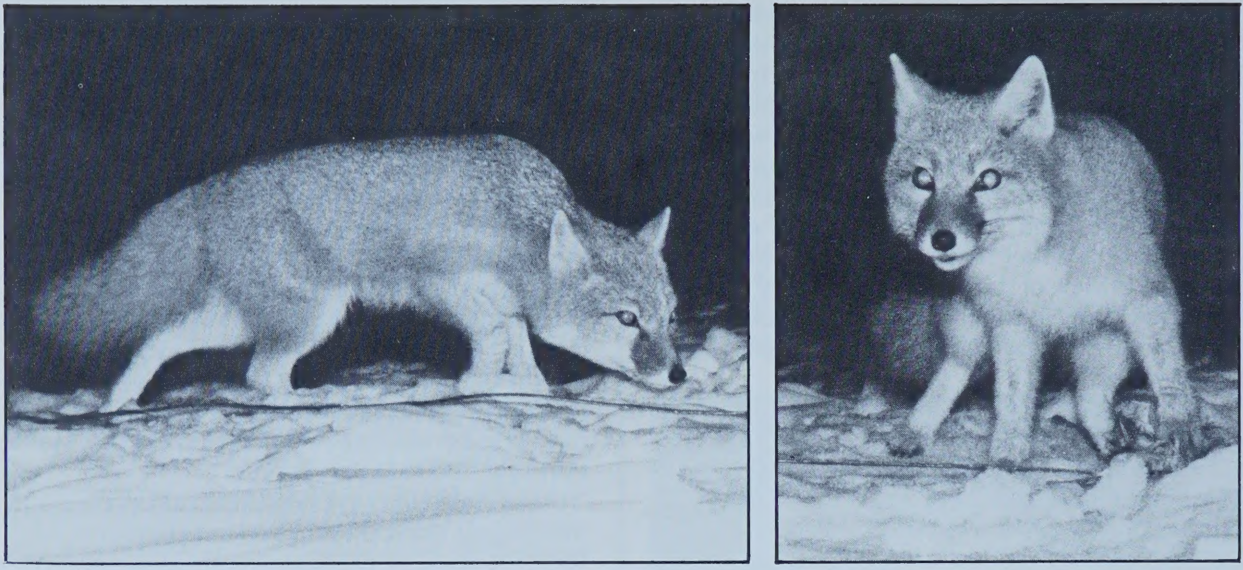
Three male foxes were captured in box traps at the breeding facilities near Cochrane on March 10 about 1100 h. Observations described here pertain only to the behavioural differences of two foxes (A - named Gandalf and B - named Corsair). After capture the foxes were placed separately in small portable dog cages (approx. 54x41x38 cm) and held within a garage for pickup at 2030 h. The animals were driven to Calgary (64 km) and held there overnight in the back of a pickup truck. On March 11 the animals were driven to Lost River Ranch (about 400 km). While in transit, at 1400 h, the foxes were each fed a one-day-old chick. At this time it was obvious that fox A was very "outgoing" and showed no fear of man in immediately accepting the chick and feeding at the entrance of the cage. Fox B was more retiring and did not come to the entrance until the human hand was withdrawn, at which time he grabbed the chick and returned to the rear of the cage. Neither fox accepted water at this time. Upon arrival at 1730 h at the Lost River Ranch, the cages were transferred from the truck to the front porch of a house. At 2000 h, the foxes were inoculated and radio collars were attached. The next day the foxes were transported to the Nashlyn, PFRA community pasture in southwestern Saskatchewan, first by truck (about 110 km), then by ATV over rough terrain another 4 km (approx. 1½ hours transit). At 1100 h, the foxes were released into a common release pen, where it was hoped that their presence would attract a free-roaming female.

Fox A picked up day-old chicks, provided as food, and systematically cached them in the snow.

After the foxes were captured, transported and handled six different times over a 48 hour period, fox B, as could be predicted from earlier observations, immediately fled from its cage and disappeared into established dens within the release pen, whereas fox A reacted by investigating the perimeter of the pen and then caching approximately 15 chicks that were offered. Caching movements of fox A involved rapid digging and the pushing of chicks with the snout into snow craters. Fox A remained above ground to investigate the new surroundings. Richard Moorhead (pers. comm.) was feeding these two foxes until March 25 and noticed that on March 18 both animals were above ground because meltwater had flooded the den boxes. He was of the impression that the two males were antagonistic towards each other. Signs on the outside of the pen appeared to indicate that a fox was trying to enter the pen and thereupon the two males were released on March 25. Male B was found dead at the site on April 16. Subsequent monitoring failed to locate Male A. In early May a single animal, that appeared to be a swift fox whose identification was unknown, was sighted by a farmer approximately 20 km northwest of the release site (M. Killaby, pers. comm.).

Both males were 2½ years old and both were born in captivity. Parents of Male B were both wildborn and originally from South Dakota. Parents of Male A were of a mixture, the male being captive-born from Colorado stock and the female being captive-born from South Dakota stock.

Shyness of fox B could be a attributed to its pedigree. However, because of the length of time that the animal was in captivity and because it was captive-born, it is more likely an individual



This sequence of photographs was taken with an automatic camera device attached to a microcomputer that synchronized the flash with the shutter. The photos are of a free-roaming swift fox in southwestern Saskatchewan taken in February 1986 at the Nashlyn Community Pasture. Note the approach of the fox to the bait which is tied at the end of a cord.

behavioural trait. Miles Smeeton, a person with extensive experience in handling captive foxes, has over the years noted the variety of "personalities" in the animals at his establishment.

In the face of high mortality due to predation by coyotes, the question is which behavioural attributes have higher survival value - boldness (and in this case a strong caching strategy) or a more retiring behavioural repertoire? Not enough data is available at this stage, but it is obvious that if in future more animals are to be released, some experimental work on different release strategies will be important. If an area is saturated with many foxes, behavioural traits will be selected that are adaptive to the local conditions. Also, one generation of foxes can be expected to leave behind such features as dens which will help in the security and survival of the next generation. Similarly, adjustment to suitable new areas can be a learned response which through cognitive recognition and use may possibly be passed on from one generation to another. On the other hand, too many foxes released in one area could reduce the available food supply for the foxes or it may attract coyotes that could develop a search image for foxes.

Individual variation within a population is one form of diversity. Another is the variability between populations, that is, locally adapted animals from one area may have acquired traits which are less adaptive in another area.

A debate has recently ensued about the appropriateness of taking more southerly foxes and releasing them in northern areas (Stromberg and Boyce 1986; Herrero, Schroeder and Scott-Brown 1986 - in press). Merriam (1902) described two subspecies of swift fox; the northern subspecies and the southern subspecies. The northern subspecies was listed as endangered in the USA in 1979, but has since been delisted on the basis that valid subspecies designation could not be proven.

Stromberg and Boyce (1986) have argued that even though subspecific status of northern populations is probably not justified, significant geographic variations may occur and therefore, an introduction of southern foxes could alter geographic variation, and by implication, genetic diversity and adaptability of the species under a wider range of conditions. Herrero *et al.* (in press) countered that the strategy for captive foxes was to maximize individual heterozygosity by crossing foxes obtained from a wide spectrum of locations. By introducing genetically heterozygous individuals it is assumed that natural selection would result in the establishment of locally-adapted populations. A program of reintroduction will enhance the biological diversity in those regions where a species was extirpated, but little is known of how (if at all) mixing of southern and northern races can influence the adaptiveness of populations currently existing in the northernmost

Photos: L.N. Carbyn (CWS).

fringes. From the releases conducted so far, little can be said that would shed more light on these opposing views.

The exact cause of death of animals in a release program is not always readily determined. For example, lack of orientation in a new area will expose a released animal to greater risks than if the same animal had been born there. Winter food may not be lacking, but if it is scarce, it could force animals to more extensive movements, hence increasing their vulnerability to predation by coyotes and bobcats. Because behaviour of individuals in a given species can vary, one kind of "personality" may be less adaptive than another in a colonizing population. Once established in a wide geographic region, different populations may be subjected to a wider range of selection pressures in which natural selection would favour different sets of behavioural characteristics in individuals of the same species.

The reader may wonder what does this all hold for the future of the swift fox in Canada? The answer partly lies in a careful and deliberate research program that employs the most up to date technical tools available to us. Equally important is a cooperative approach to management. In order to be successful, many agencies will have to work together in a worthwhile common cause.

Acknowledgements

I acknowledge with thanks the assistance provided in the field by Jo-Anne Reynolds. Her enthusiasm for swift foxes has been a great inspiration. S. Herrero, G.L. Holroyd and J. Reynolds reviewed earlier drafts of this paper. S. Herrero was particularly helpful in critically commenting on the first draft of this paper. I am grateful to C. Schroeder for his information on the origin of the captive foxes and to M. Killaby and R. Moorhead for unpublished information on the Saskatchewan sightings.

Literature Cited

Carbyn, L.N. 1982a. Incidence of disease and its potential role in the population dynamics of wolves in Riding Mountain National Park. *In* F. Harrington and P. Paquet eds. Wolves of the World. Perspectives of Behaviour Ecology and Conservation. Noyes Publications. 474 pp.

__________. 1982b. Coyote population fluctuations and spatial distribution in relation to wolf territories in Riding Mountain National Park, Manitoba. Can. Field-Nat. 96:176-183.

Dekker, D. 1983. Denning and foraging habits of red foxes, *Vulpes vulpes*, and their interaction with coyotes, *Canis latrans*, in central Alberta, 1972-1981. Can Field-Nat. 97:303-306.

Egoscue, H.G. 1956. Preliminary studies of the kit fox in Utah. J. Mammal. 37:351-357.

___________. 1962. Ecology and life history of the kit fox in Tooele County, Utah. Ecology 43:481-497.

___________. 1979. *Vulpes velox.* Mammalian Species 122, 1-5 Am. Soc. of Mammalogists.

Herrero, S. 1984. Swift fox once again. Alberta Naturalist Vol. 14, No. 1:29-32. Swift fox once again. Dinny's Digest. Winter 1984:3-11. Calgary Zoological Society.

Herrero, S., C. Schroeder and M. Scott-Brown. 1986. Are Canadian Foxes Swift Enough? Biological Conservation. In press.

Hutchinson, G.E. 1951. Copepodology for the ornithologist. Ecology 32:571-577.

Linhart, S.B. and W.B. Robinson, 1972. Some relative carnivore densities in areas under sustained coyote control. J. Mammal. 53:880-884.

Merriam, C.H. 1902. Three new foxes of the kit and desert fox groups. Proc. Biol. Soc., Washington 15:73-74.

Rand, A.L. 1948. Mammals of the Eastern Rockies and Western Plains of Canada. Nat. Mus. Canada Bull. No. 108. 237 pp.

Robinson, W.B. 1953. Population trends of predators and fur animals in 1080 station areas. J. Mammal. 34:220-227.

___________. 1961. Population changes of carnivores in some coyote control areas. J. Mammal. 42:510-515.

Russell, R.H. and G.W. Scotter. 1984. Return of the Native. Nature Canada. Vol. 13, No. 1:7-13.

Rutter, R.J. and D.H. Pimlott. 1968. The world of the wolf. J.B. Lippincott Co., Philadelphia. 202 pp.

Scott-Brown, G.M. and S. Herrero. 1985. Monitoring of released Swift Foxes in Alberta and Saskatchewan. Progress Report. Prep. for Can. Wildl. Serv., Edmonton, Alberta. 63 pp.

Stromberg, M.R. and M.S. Boyce. 1986. Systematics and conservation of the Swift fox, *Vulpes vulpes* in North America. Biological Conservation 35:97-110.

Voigt, D.R. and B. Earle. 1983. Avoidance of coyotes by red fox families. J. Wildl. Manage. 47:852-857.

Author's Address:
Canadian Wildlife Service, 2nd Floor, 4999-98 Avenue, Edmonton, Alberta T6B 2X3.

The 1985 May Species Count of Birds

Allen N. Wiseley

The May Species Count of 1985 marked the tenth year the count was held in Alberta. It was held on the May 25 and 26 weekend. A total of 164 observers from 9 naturalist groups fanned out into their favourite local haunts to make tallies of birds and record other pertinent data. A new count was initiated at Medicine Hat, with some interesting results. A week later, on June 1, another count was held at Waterton Lakes National Park by some Lethbridge observers and a few locals.

Conditions during the count were generally good, but were somewhat cool with some rain and wind part of the time in the southern areas (Medicine Hat, Lethbridge, Calgary, Banff). Grande Prairie was somewhat rainy on both days. Temperatures were in the low to mid teens in the south, and mid to high teens in central and northern Alberta.

The provincial data summary and changes from 1984 are as follows: total observers 164 (+13%), team hours 561 (+3%), total bird species 238 (+8%), total birds 56,800 (-9%).

The following section lists the locations covered and participants in each local count. Other details of local counts (distances, time spent, weather) can be found at the end of Table 1 for easier comparison.

Lethbridge/Claresholm - *Locations* Lethbridge, Claresholm, Jail Lake, McQuillan Lake, Keho Lake, Park Lake, Henderson Lake, Stirling Lake, Ridge Reservoir, Russell Farm, Luco Farm, Ft. Whoop-up, Taber Provincial Park, Nature Reserve, Tollestrup's gravel area, Jail and Research Station, Animal Disease Research Institute, Porcupine Hills *Observers* Compiler Michael O'Shea, S. Arner, A. and B. Brown, L. Cale, L. Curthays, D. and T. Dolman, C. Goodall, B. Haig, L. Hall, A. and F. Harper, D. Hedenstrom, G. Heinz-Milne, H. Hudson, H. Johnson, B. and G. Luco, L. McKillop, G. Norgard, L. Neubecker, J. Niessen, S. Petherbridge, H. and G. Ross, C. Russell, H. Sivyer, M. Thompson, J. and P. Wilkinson.

Banff/Yamnuska - *Locations* Yamnuska Natural Area, Banff, Canmore *Observers* Compiler Mike McIvor, J. and K. Cole, D. McIvor, B. Nelson, B. and M. Smith.

Calgary - *Locations* Calgary, Turner Valley, Bragg Creek, Water Valley, Cochrane, Carseland, Millarville, Inglewood Bird Sanctuary, Nose Hill Park, Fish Creek Provincial Park, Edworthy Park, Beddington Creek, Sandy Beach, Riveredge Park, AGT Building, Weaselhead and Glenmore Park, Elbow River, Bowmont Park, Bowness Park, Douglas Fir Preserve, University Prairie, Waiparous Creek, Eagle Lake, Namaka Lake, Stobart Lake, Winchell Lake, Dogpound Creek Valley, Ovan's Slough, Horse Creek, Big Hill Springs Creek Valley, Boggy Lake, Walerstreet Lakes, Nier Lakes, Bearspaw Reservoir, Irricana Sloughs, Sibbald Flats, Brown-Lowery Nature Preserve, Lloyd Lake, Okotoks campground, Big Hill Springs Provincial Park, Dalemead Reservoir, Shephard Sloughs, Paddy's Flats, Bow Valley Provincial Park, Three Point Creek, Evan Thomas Creek, *Observers* Compiler Ena Spalding, D. Allen, J. Bargman, R. Clarke, D. Collister, C. Cooper, D. Elphinstone, V. Franco-Valais, J. Goldsmith, L. Guillemette, M. Hagel, E. Hall, B. Hallworth, C. Hunt, E. Kethler, J. McFaul, A. and D. McPhail, J. Podlubny, P. Sherrington, G. Simpson, A. and L. Slater, J. Steeves, J. Thompson, S. Visser, W. Wilson *Backyard observers* A Beckman, S. Bower, E. Dawson-Grove, J. Elphinstone, J. Engelman, S. Ezinga, H. Garde-Hansen, F. Godfrey, Z. Gulyas, E. Hebron, J. Hinman, A. Kohse, T. Koziel, M. Love, K. Mahood, D. Mathews, J. McCollough, L. Moore, K. Morck, K. Mykulak, B. Niemi, C. Osborne, D. Ray, M. Thompson, G. Weinmayr, R. Young.

Stettler/Buffalo Lake - *Locations* Stettler area, Buffalo Lake, C. Bird Farm *Observers* Compiler Lloyd Lohr, C. Bird, J. Burrell, M. Capen, D. Carlyle, B. Clarke, V. Hainsworth, G. and W. Hewlett, M. Kruger.

Red Deer - *Locations* Red Deer, Blackfalds Lake, Burbank, Red Deer River, Joffre Bridge, Benalto, Pine Lake, Blindman River *Observers* Compiler Bryan Shantz, M. Cunningham, L. Gathercole, M. Glabais, H. and H. Harris, K. Larsen, D. and S. Murray, C. and M. Neufeld, M. O'Riordan, A. and B. Peck, J. Potter, F. Schutz, K. and M. Wood.

Edmonton - *Locations* Edmonton, Rainbow Valley, Beaverhill Lake, Bittern Lake, Miquelon Lake, Ord Lake, Saunders Lake, St. Albert, Devonian Botanic Gardens, Clifford E. Lee Sanctuary, Lac La Nonne, Lake Nakamun, Coal Lake, Lange's Farm, Wagner Bog, Devon River Valley *Observers* Compiler Jim Lange, J. Banks, L. and W. Hochachka, P. Komers, M. and L. Landry, K. Lange, D. Large, S. L'Hirondelle, P. Peterson, A. Wiseley.

Grande Prairie - *Locations* Wembley, Lake Saskatoon, Uswells Lake, Bear Lake, Hermit Lake, Cutbank Lake *Observers* Compiler Gavin Craig, E. Craig.

Fort McMurray - *Locations* Fort McMurray, Suncor Lease, Gregoire Lake, Engstrom Lake, Poplar Creek *Observers* Compiler John Gulley, S. Gulley, B. Koroluk, B. Wylie.

Waterton - *Locations* Waterton Lakes National Park *Observers* Compiler Mike O'Shea, D. and T. Dolman, H. and G. Ross, S. Shaw, M. Watson.

Medicine Hat - *Locations* Medicine Hat and surrounding area (12 km radius) *Observers* Compiler Craig Emes, E. Cowtan, C. Dacre, T. Dee, B. Frew, J. Gallimore, C. and R. Gardner, D. Jamieson, A. and V. Johnson, D. MacLean, B. Mumford, J. Nau, D. and M. Schiebelbein, D. Stockburger, W. Tripp, W. Tymensen, B. and M. Velner.

One of eight new bird species reported on the 1985 Count was Black-headed Grosbeak. Edgar T. Jones

Table 1 presents the species totals for each of the main count areas, plus columns for Medicine Hat and for the Waterton count, which was held a week late on June 1. The latter two areas may be added into the totals next year for future comparisons.

Eight new bird species were reported on the 1985 count, including **Ross' Goose** (Edmonton) **Eurasian Wigeon** (Grande Prairie)**, Black-billed Cuckoo** (Stettler and Edmonton), **Lewis' Woodpecker** (Medicine Hat), **Black-throated Blue Warbler** (Medicine Hat), **Yellow-breasted Chat** (Medicine Hat), **Black-headed Grosbeak** (Waterton) and **Lazuli Bunting** (Lethbridge and Calgary).

A new provincial May Species Count record was set by Calgary for most species recorded by a count area (188), surpassing the 1978 total of 175 by Edmonton. This (1985) was the fifth year in a row that Calgary has led the species totals for count areas. Calgary also had at least 70% more observers than any other area. Areas with increases in species totals from 1984 included Stettler (+35%), Calgary (+14%), and Grande Prairie (+1%). Fort McMurray had the same number of species as in 1984. Count areas with decreases in species totals from 1984 included Banff (-2%), Edmonton (-7%), Lethbridge (-17%), and Red Deer (-23%).

Examining the differences among species totals for 1984 and 1985 shows numerous marked decreases. There were 35 major decreases compared to only 10 major increases. Birds included in the list of decreases included Horned and Western Grebes, Great Blue Heron, Canada Goose, Green-winged Teal, Mallard, Northern Pintail, Northern Shoveler, Gadwall, Lesser Scaup, Ring-necked Duck, Common Goldeneye, Ruddy Duck, Northern Harrier, Red-tailed Hawk, American Coot, Lesser Yellowlegs, Wilson's Phalarope, Black Tern, Downy Woodpecker, Northern Flicker, Western Kingbird, Cliff Swallow, Black-capped Chickadee, Ruby-crowned Kinglet, Mountain Bluebird, Swainson's Thrush, Water Pipit, Yellow-rumped Warbler, Common Yellowthroat, Chipping Sparrow, Savannah Sparrow, Le Conte's Sparrow, White-crowned Sparrow, White-throated Sparrow, Dark-eyed Junco, Chestnut-collared Longspur, Yellow-headed Blackbird, and Purple Finch.

Substantial increases from 1984 include Sora, Franklin's Gull, Eastern Phoebe, Horned Lark, Bank Swallow, Barn Swallow, Warbling Vireo, Red-eyed Vireo, Tennessee Warbler, Northern Oriole and Brown-headed Cowbird.

There were 25 species that were reported in 1985 that were not seen on the 1984 count. Other than the eight new species previously mentioned, these included Oldsquaw, Red-breasted Merganser, Turkey Vulture, Golden Eagle, Short-billed Dowitcher, Mew Gull, Burrowing Owl, Barred Owl, Long-eared Owl, Black-backed Woodpecker, Gray-cheeked Thrush, Connecticut Warbler, Canada Warbler, American Tree Sparrow, Baird's Sparrow, Fox Sparrow, Harris' Sparrow, and White-winged Crossbill. In contrast, there were only five species that were not found in 1985 that had been reported in 1984. These were Broad-winged Hawk, Semipalmated Plover, American Dipper, Western Bluebird, and Bohemian Waxwing.

Discussion

It was hard to believe that the drought would continue, but it did, and its effects were even more pronounced than in 1984 on water-dependent bird species. In 1985 we saw the dry bottoms of many ponds and lakes that were previously thought "permanent". Most waterfowl species responded to the lack of breeding habitat with substantial reductions in numbers. Similarly, other species, including grebes, Double-crested Cormorant, herons, American Bittern, Northern Harrier, American Coot, Killdeer, Lesser Yellowlegs, Wilson's Phalarope, Black Tern, Common Yellowthroat, Savannah and Le Conte's Sparrows and Yellow-headed Blackbird were probably greatly affected by the lack of moist habitat.

The other notable declines in numbers have less obvious causes. Most of these remaining species seem to have returned to levels found in 1982 or 1983, after higher than average reports in 1983 or 1984. These include Red-tailed Hawk, Downy Woodpecker, Northern Flicker, Western Kingbird, Cliff Swallow, Black-capped Chickadee, Ruby-crowned Kinglet, Swainson's Thrush, Yellow-rumped Warbler, White-crowned and White-throated Sparrow, Dark-eyed Junco, and Purple Finch.

For Mountain Bluebird, Water Pipit, Chipping Sparrow, and Chestnut-collared Longspur, the pattern of the previous years is different from the above. Counts of Mountain Bluebirds were apparently not supplemented by nest box route counts in 1985, as they were in the past. Water Pipit numbers (a total of 6 at two locations) show that they were not found in flocks, as is usually the case. Chipping Sparrow numbers have been fluctuating considerably from 200 to 600 over the 10 years of the count. This may reflect their tendency to be found in many areas and habitats, both on territory and in late spring migratory flocks which could be sometimes missed. Chestnut-collared Longspurs may have been inadequately sampled in the two areas (Lethbridge and Calgary) that have significant populations.

There are several different likely explanations (and speculations) for the substantial increases found in some species numbers. Some people in Lethbridge took the time to count colonies of Bank Swallows (this should be encouraged), explaining this increase. Another colonial species, Franklin's Gull, was counted in large numbers at Grande Prairie, as it often is. When this species increases or decreases, it usually is because of the Grande Prairie count, in spite of fluctuations that might be occurring elsewhere. Horned Larks are among the most common prairie and agricultural field species, but are commonly overlooked on bird counts (Stettler and Red Deer had none). Their increases in 1985 may reflect the irregular attention they commonly receive. The Eastern Phoebe seems to have returned to 1982 and earlier levels after a sharp decrease in 1984. Unlike most wetland birds in the province, the Sora increased substantially from an 8 year low in 1984. From the data it first appears that it may not be affected by drought in the same way as other species, but the explanation is more likely sampling anomalies. Tennessee Warbler numbers are believed to fluctuate more than most other warblers in Alberta, suggesting that its increase in 1985 represented a peak, especially in Calgary and Edmonton. Barn Swallow, Warbling Vireo, Northern Oriole, and Brown-headed Cowbird each showed much of their increases in numbers from the Calgary count, which had exceptional coverage in 1985. The Red-eyed Vireo occasionally arrives later than other insectivorous species, which may explain its low numbers in the cool spring of 1984. Its record rebound in 1985 was felt in all count areas.

As has been repeatedly mentioned, count areas should continue to improve their sampling methods and should accurately report details of their counts. Many of the speculations on population changes could be better substantiated if there were consistency in data gathering and reporting from year to year.

Author's Address:
#202, 635-56 Ave. S.W., Calgary, Alberta T2V 0G9.

May Bird Count 1985 *Table 1.*

Full names for count areas are given in the text.

SPECIES	LETH	BANF	CALG	STET	REDD	EDMO	GRAN	FORT	TOTAL	WATE[1]	MEDI
Common Loon	1	3	13			3	4	15	39		
Pied-billed Grebe	3		2			6	7	1	19		
Horned Grebe	4		11	9		20			44		
Red-necked Grebe	2	5	27		22	18	14	13	101	3	
Eared Grebe	17		31	6	3	52	300		409		
Western Grebe	4		3		1	2	7	2	19		
Unidentified Grebe			1						1		
American White Pelican	59		3						62		
Double-cr. Cormorant	12		36				1	11	60		7
American Bittern		4	1				4	1	10		
Great Blue Heron	11	1	31	1	5	13		6	68	1	15
Black-cr. Night-Heron			7			4			11		
Tundra Swan		2	4						6		
Trumpeter Swan							13		13		
Gr. White-fronted Goose			WK[2]					WK	0		
Lesser Snow Goose	2								2		
Ross' Goose						3			3		
Canada Goose	317	138	1010	11	67	31	90	WK	1664	29	123
Green-winged Teal	6	4	31		4	42	7	11	105		
Mallard	206	40	355	34	77	248	153	13	1126	7	138
Northern Pintail	111		113		5	43	34	WK	306		55
Blue-winged Teal	72	7	466	53	47	126	69	7	847	3	20
Cinnamon Teal	26	8	79	1	2	1	3		120	8	
Northern Shoveler	78	4	166	13	16	54	58	2	391		13
Gadwall	92		138	8	2	48	52	2	342		20
American Wigeon	85	6	110	8	5	49	98	10	371	2	15
Eurasian Wigeon							1		1		
Canvasback	63		90	21	22	60	31		287	4	15
Redhead	16		33	7	24	107	45	10	242		3
Ring-necked Duck	2	22	33		2	22	4	20	105	4	7
Lesser Scaup	26		342	43	35	236	602	34	1318	2	15
Harlequin Duck									0	3	
Oldsquaw							3		3		
Surf Scoter							22	4	26		
White-winged Scoter	1		14		15	2	693	2	727		
Common Goldeneye			14	3	28	26	7	22	100	6	
Barrow's Goldeneye		2	4				4		10	8	
Unidentified Goldeneye									0	1	
Bufflehead	2	9	23	12	7	101	34	24	212	12	
Common Merganser	10	6	83	3	5	10	1	WK	118	2	13
Red-breasted Merganser	2		4						6		
Unidentifed Merganser	13								13		
Ruddy Duck	17		51	3	20	62	28	4	185		
Turkey Vulture				1					1		
Osprey		1	WK						1	2	
Bald Eagle		2					3		5		
Northern Harrier	27		13			8	8	2	58	1	6
Sharp-shinned Hawk			2	1					3		1

SPECIES	LETH	BANF	CALG	STET	REDD	EDMO	GRAN	FORT	TOTAL	WATE	MEDI
Cooper's Hawk			3			2			5		
Northern Goshawk			2				1	1	4		
Swainson's Hawk	93		73	2	3	6			177	1	30
Red-tailed Hawk	40	1	80	10	18	24	9	1	183	2	2
Ferruginous Hawk	7		4	1					12		3
Rough-legged Hawk		1	2					WK	3		
Unidentified Hawk	4								4	1	
Golden Eagle			1						1	2	3
Unidentified Eagle									0	1	
American Kestrel	19		26		6	5	3	18	77		19
Merlin	3		14			3		WK	20		
Peregrine			2					WK	2		
Prairie Falcon	1								1		1
Gray Partridge	20		22	2		2			46		2
Ring-necked Pheasant	12		22	1	1	3	1		40		14
Ruffed Grouse		6	22	3	6	3	4	8	52	8	
Sharp-tailed Grouse	3		24				4		31		10
Sora	1	4	14		5	22	11	5	62		
American Coot	101	14	174	9	15	214	26	27	580		12
Sandhill Crane			2			1		WK	3		
Black-bellied Plover	18		149			30		1	198		
Lesser Golden-plover			2					13	15		
Semipalmated Plover								WK	0		
Killdeer	57	12	87	14	14	38	13	18	253	4	32
American Avocet	8		96	5		9			118		
Greater Yellowlegs		1	6				1	2	10		
Lesser Yellowlegs			5			18	11	12	46		2
Solitary Sandpiper		1	3					3	7		
Willet	23		39	7					69		18
Spotted Sandpiper	25	13	157	9	12	34	2	34	286	11	14
Upland Sandpiper			13			3		WK	16		2
Whimbrel	WK								0		2*
Long-billed Curlew	14		1						15		13
Marbled Godwit	36		47	3		14	2		102		9
Ruddy Turnstone								2	2		
Sanderling			11			3		5	19		
Semipalmated Sandpiper			1031	9		179	37	2	1258		
Least Sandpiper			2			19	7	8	36		
White-rumped Sandpiper						34			34		
Baird's Sandpiper			8			3	132	8	151		
Pectoral Sandpiper			4			108	5	2	119		
Stilt Sandpiper			75			34	4		113		
Buff-breasted Sandpiper						80			80		
Unidentified Peeps	64								64		
Short-billed Dowitcher			1				1		2		
Unidentified Dowitcher				15					15		
Common Snipe	6	12	75	2	4	26	11	4	140	13	1
Wilson's Phalarope	116		326	2		15	16	WK	475	3	7

May Bird Count 1985

Full names for count areas are given in the text.

SPECIES	LETH	BANF	CALG	STET	REDD	EDMO	GRAN	FORT	TOTAL	WATE	MEDI
Red-necked Phalarope			1027						1027		
Franklin's Gull	5		751	127	16	519	3900	WK	5318		5
Bonaparte's Gull	2		7			5		7	21		
Mew Gull								2	2		
Ring-billed Gull	50		404	2	192	135	116	6	905		138
California Gull	12		345	31	119	1	3	368	879	1	32
Herring Gull			1				2	158	161		
Unidentified Gull	2215		17	32					2264	12	470
Common Tern	19		23	12	1	13		4	72		15
Forster's Tern			7			17			24		
Black Tern	7		55	16	34	124	26	16	278	4	
Rock Dove	196		179	7	65	116	3		566		349
Band-tailed Pigeon			WK						0		
Mourning Dove	97	1	64		4	8			174		56
Black-billed Cuckoo				1		1			2		
Great-horned Owl	12		6		1	1		WK	20		1
Burrowing Owl	4		1						5		1
Barred Owl			1						1		
Great Gray Owl			3						3		
Long-eared Owl									0		1
Short-eared Owl	5		1				1		7		
Northern Saw-whet Owl					1				1		
Common Nighthawk	1					1	1	5	8	1	1
Unidentified Swift									0	1	
Ruby-throated Humming			4			4			8		
Calliope Hummingbird		2	WK						2		
Rufous Hummingbird		4	6						10	3	
Belted Kingfisher	6		13		1	2		1	23	3	3
Lewis' Woodpecker									0		1
Yellow-bellied Sapsucker		1	17	1	2	4	4		29	3	
Downy Woodpecker	1	1	9	3	2	6			22		7
Hairy Woodpecker	1	1	4		14	9	2	4	35		
Three-toed Woodpecker							2		2		
Black-backed Woodpecker			1						1		
Northern Flicker	11	4	47	2	3	6	5	14	92	7	22
Pileated Woodpecker		2	3	1	2	1			9		
Olive-sided Flycatcher	1		5			1			7	5	
Western Wood-Pewee	10	4	67	1		24		2	108		3
Alder Flycatcher			2			4		2	8		
Willow Flycatcher			WK						0		
Least Flycatcher	13	5	317	26	9	396	14	63	843	10	9
Dusky Flycatcher			7						7		
Western Flycatcher			1						1		
Eastern Phoebe	1		14	1	4	17	11	1	49		
Say's Phoebe			1						1		
Western Kingbird	31		4	3					38		51
Eastern Kingbird	59	2	45	10	3	25		2	146	1	110
Unidentified Flycatcher	9								9		

SPECIES	LETH	BANF	CALG	STET	REDD	EDMO	GRAN	FORT	TOTAL	WATE	MEDI
Tennessee Warbler	1	4	91			39	1	68	204		
Orange-crowned Warbler		8	19					1	28		
Yellow Warbler	110	11	237	27	7	125	13	33	563	46	91
Chestnut-sided Warbler			WK						0		
Magnolia Warbler						2		4	6		
Cape May Warbler			1						1		
Black-throated Blue Warbler									0		1
Yellow-rumped Warbler	3	33	60		2	20		7	125	12	
Townsend's Warbler		8	WK						8		
Black-throated Green W.			1						1		
Palm Warbler						1			1		
Bay-breasted Warbler			WK						0		
Blackpoll Warbler	1		2			5		1	9		2
Black-and-white Warbler						1		7	8		
American Redstart		4	1			5	7	15	32	1	
Ovenbird		2	15			13		31	61		
Northern Waterthrush		1	9			1		14	25	5	
Connecticut Warbler			3						3		
Mourning Warbler			WK			1		1	2		
MacGillivray's Warbler									0	6	1
Common Yellowthroat	11	17	37	4		15	3	3	90	4	18
Wilson's Warbler	2	11	20				2	15	50	20	
Canada Warbler								4	4		
Yellow-breasted Chat			WK						0		1
Scarlet Tanager			WK						0		
Western Tanager			2			3		4	9		
Rose-breasted Grosbeak	1	1	23		4	20	2	18	69	1	1
Black-headed Grosbeak									0	1	
Lazuli Bunting	1		2						3	5	
Rufous-sided Towhee	16		1						17	1	56
American Tree Sparrow					1	1			2		6
Chipping Sparrow	20	16	227	2	7	45		80	397	26	7
Clay-colored Sparrow	46		314	37	11	61	8	25	502	15	57
Vesper Sparrow	154	1	117	5	2	10	9		298	2	4
Lark Sparrow	13								13		36
Lark Bunting	2								2		3
Savannah Sparrow	72	6	164	40	14	57	87	48	488	5	1
Baird's Sparrow			1						1		
Grasshopper Sparrow				1*					0		1
Le Conte's Sparrow			2		4	11			17		
Fox Sparrow									0	4	
Song Sparrow	8	3	49	29	12	41	3	23	168	3	
Lincoln's Sparrow		7	30			55		6	98		
Swamp Sparrow						11	1	4	16		
White-throated Sparrow		2	47	3	13	63	7	46	181		
White-crowned Sparrow	1	8	39					2	50	24	1
Harris' Sparrow						1		1	2		
Dark-eyed Junco		16	53	1	3	17	2	6	98	7	8

SPECIES	LETH	BANF	CALG	STET	REDD	EDMO	GRAN	FORT	TOTAL	WATE	MEDI
Horned Lark	199		24			3		113	339		103
Purple Martin				8	20	20			48		
Tree Swallow	138	22	1544	45	344	144	12	135	2384	56	
Violet-green Swallow		3	4						7		5
North. Rough-winged Sw.	212	26	417		30	2			687		1
Bank Swallow	2137		671	22	260	220	150	76	3536		121
Cliff Swallow	602		1145	40	35	44		1024	2890	29	63
Barn Swallow	290	12	1044	55	33	261	19	51	1765	9	24
Unidentified Swallow	40								40		
Gray Jay		4	9					12	25	9	
Steller's Jay									0	3	
Blue Jay	3		17		9	20	4	1	54		
Clark's Nutcracker			1						1		
Black-billed Magpie	117	7	359	19	31	152	30	2	717	17	249
American Crow	95	10	328	62	49	113	64	8	729	26	76
Common Raven	4	13	34				3	60	114	2	
Black-capped Chickadee	6	2	57	1	19	42	8	1	136	3	11
Mountain Chickadee		6	WK						6	9	
Boreal Chickadee			8		3	6		WK	17		
Red-breasted Nuthatch	5	3	38		4	2			52	3	3
White-breasted Nuthatch		2	1			3			6		
Rock Wren	4		2						6		6
House Wren	56		127	5	15	35		1	239	16	43
Winter Wren									0	2	
Marsh Wren			1	27		2			30		
Golden-crowned Kinglet		4	24			1			29	5	
Ruby-crowned Kinglet	1	30	78		4	8		6	127	20	3
Mountain Bluebird	25	1	28	4	7	4	2		71	7	
Townsend's Solitaire	1	3	2						6	2	1
Veery	1		9	3		1			14	5	
Gray-cheeked Thrush							4		4		
Swainson's Thrush	19	3	56			1		7	86	3	20
Hermit Thrush		3	8		2	1		5	19	2	
American Robin	227	25	560	38	73	144	23	87	1177	33	197
Varied Thrush		2	8						10	4	
Unidentified Thrush	2								2		
Gray Catbird	24		10	1	5	5			45	3	11
Northern Mockingbird									0		**2**
Brown Thrasher	15		6						21		37
Water Pipit	2							4	6		
Sprague's Pipit	4		25			1			30		
Cedar Waxwing	8		17						25	2	11
Loggerhead Shrike			1						1		
European Starling	527	15	817	56	54	134	34	23	1660	34	352
Solitary Vireo		2	5			3		2	12		
Warbling Vireo		5	70	2		30		3	110	6	10
Philadelphia Vireo			6			4		1	11		
Red-eyed Vireo	8		25	5	7	72	2	20	139		3
Lapland Longspur								37	37		
Chestnut-coll. Longspur	15		1						16		3
Bobolink				1					1		
Red-winged Blackbird	199	47	461	166	195	1520	272	194	3054	31	149
Western Meadowlark	174		63	3		5			245	5	118
Yellow-headed Blackbird	116	1	404	13	10	90	30	18	682	1	47
Rusty Blackbird						4		5	9		
Brewer's Blackbird	132	6	176	22	87	232	31	45	731	4	99
Common Grackle	32		3			54	10	28	127		34
Brown-headed Cowbird	159	73	463	13	6	136	22	61	933	30	25
Northern Oriole	69		272	39	36	167	14	1	598	1	43
Purple Finch		2	7			8	2	6	25		
Red Crossbill			WK						0		
White-winged Crossbill			20						20		
Unidentified Crossbill			5						5		
Pine Siskin	48	13	259		1	52	24	WK	397	162	60
American Goldfinch	51		125	8	9	6			199	14	42
Evening Grosbeak		3	23		4	6	6	63	105		
House Sparrow	224	1	307	25	40	243	1	34	875		265
AREA TOTALS	**11179**	**864**	**21170**	**1439**	**2443**	**8394**	**7703**	**3646**	**56838**	**941**	**4467**
Number of Species	116	89	**188**	85	91	150	103	117	**238**	89	105
Number of Observers	31	7	52	10	18	12	2	4	136	7	21
Team Hours	68.5	29	246.5	27.5	53	85	20	31.5	561	27.5	64
walking		22.5	150		17	45.5	5	10			43
driving		6.5	43		10	38.5	15	21.5			21
other			63.5		26	1					
Team Distance (km)	930	244	1240	118	244	742.5	96	408	4023	133	338
walking	36	56	175.5	16	28	60.5	3	16		25	65
driving	894	188	1064.5	102	216	681	93	392		108	273
other						1					
Weather										June 1	
Precipitation (mm) May 25	13.1	10	7.6			0	0.2	0			
" May 26	0.8	0	trace		0	0	4.2	0		trace	
Cloud cover (%) May 25	100	100	100			30-100	100	0-60			
" May 26	100	75	60-100			10-80	100	0-70			20-100
Wind direction	NE-SE	W;W	ENE;SSE			SE;SE	SE;E	N;NW		NIL	W
Wind speed (km/h) May 25	6-22	16	18-33			15	10	0-24			
" May 26	9-14	0-10	17-33		0-20		7	0-24			15
Temperature (C) May 25	9-14	4-9	5-8	2-20		6-16	15	-1-14			
" May 26	5-11	4-14	4-12		12-20	6-18	16	-1-17		5-16	7-14

1 Waterton Count done on June 1

2 WK = Observed during the week before or the week after the count, but not on the count weekend itself

* = insufficient detail provided

F.A.N. NEWS

Summer Meeting

The F.A.N. summer field meeting is planned for July 5-6 in the Rocky Mountain House area. Field trips will sample some of the interesting and varied features of natural and human history that this region has to offer.

Fred Schutz, F.A.N. director from the Red Deer River Naturalists, will be leading the trip, and as many of you know, Fred is a storehouse of information on this area. Contact Fred for details at 843-6420.

Events planned include: a Saturday morning presentation on and a hike through a proposed wildlife area near Rocky Mountain House with Tony Nette of Alberta Fish and Wildlife; a Saturday afternoon tour of the Rocky Mountain House National Historic Park, Alberta's only N.H.P.; a Sunday trip to the Brazeau Reservoir to see, among other things, nesting osprey and herons. Side trips are planned to search for Sandhill Cranes, which breed in this area, and to investigate the interesting botanical features of the Boreal Foothills region.

Crimson Lake Provincial Park, 14 km NW of Rocky, is the designated meeting place; signs will be posted Friday evening near the main entrance. Reservations for camping sites on Loop F can be made through Alberta Recreation and Parks at 845-2330. If you are camped elsewhere, or if you are using other accommodation in Rocky, then you should join the field trip Saturday morning at 9:00 a.m. at the bridge across the North Saskatchewan River on Hwy. 11, approximately 4 km NW of Rocky. As you approach the bridge from the east you will pass Hwy. 22 North and then immediately before you reach the bridge there is a right-hand turnoff. A sign will be posted there and room is available for parking.

Come join with fellow naturalists in a leisurely summer jaunt through an interesting part of west-central Alberta.

Fall Meeting

The Lethbridge Naturalists' Society and the recently formed Grassland Naturalists of Medicine Hat will be cooperating in the hosting of a Fall F.A.N. meeting in Brooks, Alberta. This is a new meeting place and will give F.A.N. members and directors an opportunity to meet local naturalists in the Brooks area and other parts of southern Alberta. The meeting will be on September 13-14.

Rob Gardner, F.A.N. Vice-president, is the organizer. Details are available from him in Medicine Hat (529-6225 wk) or from the F.A.N. office at 422-0544. Complete details are included with an insert accompanying this issue.

FAN Letter to the Premier of B.C.

Dear Mr. Bennett:

The Federation of Alberta Naturalists is an organization of approximately four hundred individuals and eight corporate member clubs which include an additional membership of well over one thousand people. We have a long standing interest in the study of natural history and in promoting the cause of environmental education and conservation. Many of our members spend a great deal of their leisure time and disposable income in "Super Natural" British Columbia enjoying the varied and magnificent natural heritage that still exists there.

We are aware that the Government of B.C. has established a Wilderness Advisory Committee to consider the future of wildland in your province; within existing parkland, and in areas that are known to possess significant potential. It is certainly a useful exercise to conduct long range planning on a province-wide scale but we are very concerned that the Committee has been given such a short time frame for their deliberations and we are extremely disappointed that your Government allowed logging on Lyell Island to continue while this important study was underway.

It is apparent that this planning process was launched, at least partly as a result of mounting pressure - provincially, nationally and internationally - for the preservation of the outstanding heritage values of the South Moresby region of the Queen Charlotte Islands. We have expressed ourselves on this matter before but to reiterate, we believe that South Moresby is a unique but fragile treasure that deserves the highest level of protection.

The Federation is well aware that despite the results of the Wilderness Advisory Committee's work, any decisions which follow will of necessity, be political. For this reason we wish to submit some very brief comments that we trust you will receive as the ideas of a group of fellow Canadians who view our natural inheritance as a special and common resource.

To the extent that wilderness preservation will be played off against the needs and/or desires of primary resource development industries, we think it is imperative that all values, all benefits and all costs be included in the equations. It is clear that the resource-based industries are quite capable of speaking for themselves although they will surely generate strong support from the relevant government departments. But we feel that a full assessment is required of the social, environmental and economic costs of the single-minded emphasis on resource development. There must be a full assessment of the real and potential economic, environmental, and social benefits of parks and wilderness which have traditionally been downplayed or ignored. There must be consideration of the range of non-market values which accrue to protected landscapes and wilderness. There must be an acceptance of a clear responsibility towards Native People that is founded on understanding and sensitivity. There must be strong recognition forthcoming from the Government and industry that the twenty-four areas under scrutiny represent an extremely small fraction of the total land base of British Columbia.

B.C. needs a complete and integrated spectrum of preservation and recreation landscapes. B.C. needs a coherent wilderness policy and high quality areas need legislative protection. We are hopeful that the process involving the Wilderness Advisory Committee will provide ample demonstration of the depth and breadth of feeling which many Canadians have towards wilderness as an essential component of our cultural life. We offer our strong support to all those British Columbians who want to keep the "Natural" in "Super Natural" B.C.

Yours Sincerely,

Pat Clayton, President

c.c.
The Hon. Austin Pelton, Minister of the Environment.
Wilderness Advisory Committee, #1130-1090 West Georgia Street, Vancouver, B.C.

Report on Federal - Provincial Wildlife Conference, 1985

The forty-ninth Federal-Provincial Wildlife Conference, hosted by the Nova Scotia Department of Lands and Forests, was held at the Chateau Halifax in Halifax, Nova Scotia, June 25-28, 1985.

This year's theme "Communicating About Wildlife" proved to be a very informative title for today's wildlife concerns. The keynote speaker, Michael Halleran (B.C. Wildlife Federation), delivered an excellent speech with a central message of the need for more intensive wildlife management. He apologized to the delegates for the slight imposed on them by the Government of British Columbia. There were no representatives present from the B.C. Wildlife Branch. Revenue derived from hunters', guides' and trappers' licenses exceeds the budget of the Wildlife Branch which left him with the feeling wildlife has virtually no real priority in B.C. Many wildlife populations may decline even with more intensive management, but will certainly perish without it. He felt the animal rights groups were convincing the press, public and politicians that modern wildlife management is not needed. Management by lobby, as it becomes more successful, means that resource managers must be forced to follow the dictates of the strongest lobby instead of the science-based teachings of their own profession. Some industries consider that between 5 and 10 percent of overall operating costs should be spent on advertising. Perhaps it is a "Conversation Officer" that is needed. In B.C., the Wildlife Federation has its own television series. The programs deal with all aspects of renewable resource management. Why not a national resources television network across the country? The Wildlife Federation is using hunters' money and thousands of hours of volunteer labour for management and habitat.

The Canadian Forestry Association's representative, Bill Young, indicated that an acceptable relationship between forestry and wildlife may be simply a matter of scheduling timber harvests and that given the appropriate wildlife input, the wildlife resource could benefit. He also emphasized the importance of having our facts straight and recommends that we strive for consensus at all three forest resource levels; strategy, management and operations.

Wildlife managers may have less room to maneuver when it comes to agriculture (compared to forestry) as Keith Smith's presentation and video clips revealed. The farmer must benefit from management practices with either actual dollar incentives or improvements such as soil and water conservation. In regards to communication, Keith advised us to be certain farmers (especially non-hunting farmers) are represented in wildlife operations.

Monte Hummel of the World Wildlife Fund advocated that an approach to communicating wildlife issues should involve openness, mutual respect, getting all information on the table, inviting criticism and trying to solve the issues on the basis of having a mutual problem and a shared concern.

Looking at the political aspect, Roger Simmons, from Newfoundland, brought forth some good advice:

- lobbying - an underused effective method of communicating your concerns to the politicians.
- know what you want to say and why and be brief: by definition a brief is short!
- communicate wildlife interests early, before policy changes are effected, not after, and to inform MP's of our ideas in the ridings where the wildlife issues exist.
- package your concern in terms of the politician's interest (talk to, encourage and help politicians).

The importance of communicating effectively was brought forth rather dramatically in the following Case Studies: Newfoundland sealing - David Quinton of CBC TV gave a very emotional and informative talk on the former harp seal fishery. There was a battle of pictures and words - a communications war - with the main chapters written by the protesters. New Brunswick forest spraying - Tom Carruthers, publisher of the Atlantic Advocate, assured us there can be no substitute for an informed public. Through effective communication in the mass media people have generally accepted the need for the budworm spray program. The New Brunswick Government came to realize that factual information supplied to the public through the media was the only means by which the public concern could be answered. British Columbia wolf control - Al Murray, formerly of the B.C. Government, looked at the pros and cons of the wolf control program and where it went wrong in terms of public information.

The 1985 transactions (as well as those from preceding years) are highly recommended to interested persons and may be obtained from Environment Canada.

The 1986 Federal-Provincial Wildlife Conference will be held in Ottawa, June 16-19.

Jim Potter

Wagner Natural Area Society - 1985/86

The WNAS completed its third year of operation in 1985. A diverse range of topics was dealt with at meetings; some of these are outlined below.

Snowmobiling. A Memorandum of Agreement has been reached with the Wild Orchid Recreation Society (WORS) on snowmobile use in the area. The agreement is to run for five years. A perimeter trail has been flagged out; only minimal brush clearing was necessary. Little use was made of the trail over most of this past winter (not enough snow). No other motorized vehicles will be allowed in the area at any time. (There has been and is a problem with ATC disturbance along the Cabin Trail.) The Minister of Public Lands and Wildlife is being urged to enact a regulation prohibiting the use of off-highway vehicles in Wagner. Such a regulation will in effect render the snowmobiling agreement null and void.

Lease for the Villeneuve Road Extension. WORS has withdrawn its objection to the closure of the Villeneuve Road extension. There has been no response yet from the County of Parkland to the WNAS application to lease the road extension.

Natural Area Status. The Wagner property can have N.A. status even though it is privately leased. It was one of three sites proposed for Cabinet consideration as an N.A. at the fall sitting of the Legislature, but there has been no action yet.

Fencing. Four people were employed from June to September under the Alberta Environment Employment Program to fence the perimeter of the property. Fencing has been completed except for an 800 m stretch at the south end. There was much turnover in the work crew and a power auger, first aid kit, and 150 fence posts were stolen. The south end of the Villeneuve Road extension has been fenced. There has been no response yet from the County of Parkland for permission to close off the north end.

Trails. The first trail loop has been completed and guide posts have been installed. The "official" trail-opening ceremony is slated for Saturday, June 7 at 2:00 p.m. Mr. Alistair Crerar, Chief Executive Officer of the Environment Council of Alberta, has agreed to be the keynote speaker. Other invited speakers include the Hon. Don Sparrow, Mr. Bill Purdy, MLA for Stony Plain, Mr. Chuck Moser (Recreation, Parks and Wildlife Foundation) and a representative from the Blair Family Foundation. Guided walks, sponsored by the Provincial Museum, were conducted in the Area as part of the National Wildlife Week celebrations in April. Guided walks will also take place following the trail-opening ceremony. An illustrated trail guide has been completed; it is to be printed by Alberta Energy and Natural Resources this spring. There will be a separate guide prepared for winter use. Boxes for trail guides have been built and installed on site. A visitors' book to keep tabs on trail use will be provided at the trail head. Guidelines for trail "etiquette" have been formulated. Two educational packages about the WNA, aimed at elementary and junior high school levels, are being prepared. Nine organized and numerous informal field trips were made to the area by various groups during the summer of 1985.

Management Plan. A graduate student from the Faculty of Environmental Design at the University of Calgary is preparing a Management Plan for the WNA as her thesis for a master's degree in Experimental Design. The plan is expected to be completed by June. Protection of the site is considered the prime objective, with education, research and recreation as lesser priorities.

Land Acquisition. Alberta E&NR has acquired 10 ha of land to the southeast of the current N.A. This land will be incorporated into the existing N.A.

Haying. Mr. Wagner will continue with haying operations on the property with the Society being paid an annual rental fee of $500.

Invertebrate Studies. Interesting results are coming from the invertebrate studies at the WNA. Many species are new for the region and several represent considerable range extensions. A short article on these studies is to be prepared for publication in the *Edmonton Naturalist* or the *Alberta Naturalist*. Dr. Bert Finnamore, Curator of Entomology, gave a presentation on "Bugs of the Bog: a look at the insect fauna of Wagner Bog" at the Provincial Museum on April 3.

Miscellaneous. Freeman Patterson visited the WNA last June collecting material for the photo essay published in the spring issue of *Nature Canada* (funded by Xerox Canada Inc.). *Environment Views* devoted its December issue to natural areas; the Wagner property and the Society were included. Keeping toilet paper in the privies is one of the greatest challenges currently facing the Society!

Future directions for the Society possibly include greater and more structured use of the trail system (including school groups as part of their science curricula) and possible expansion of the trail system itself. Before proceeding with such a program the impact of current visitor use in the area will be monitored.

J. Derek Johnson

Numerous marl ponds are among the distinctive features of the Wagner Natural Area. Photo: J.D. Johnson

Clifford E. Lee Nature Sanctuary - 1985

The past year was again a very active one for the management committee of the Clifford E. Lee Nature Sanctuary. The resource management subcommittee continued its active role at the Sanctuary and the interpretative committee began implementing some of its program. Summer projects continued to improve the on-site facilities for planned program development. The management committee enlarged the Sanctuary boundaries.

Alberta Environment Employment Program. This summer our committee received funding of $27,625 for hiring a supervisor and a crew of three to make on site improvements and to optimize habitat diversity. Unfortunately funds for the interpretative development did not materialize to the full extent, which hampered our interpretative program. Work on the south quarter this season involved boardwalk repair, litter containers, new benches, a registry box and new trail signs. An outdoor toilet was constructed at the junction of our three trails. Fence repair and maintenance was done on the north quarter and Sanctuary signs were erected along the fence boundary. Copses of jack pine were planted along the Jack Pine Knoll. A ten car parking lot was constructed at the main entrance with the assistance of the County of Parkland.

Resource Management. Again this year another small portion of the south quarter meadow was burned. The north quarter was grazed by six to eight horses, under a leasing agreement with a neighbour. Two pairs of Canada geese were spotted on the Sanctuary and one pair nested on the flax bales placed out in the marsh in 1983-84. The forage area planted last fall for the geese to feed on did not grow and will need to be redone next season. A preliminary agreement was reached with Ducks Unlimited to actively manage the water levels as well as increase habitat diversity.

Sanctuary Use. Spring, summer, and fall seasons saw an increase in the unstructured use of the Sanctuary with about 35 to 45 visitors per week. The summer supervisor took a number of structured groups to the Sanctuary, including local school groups and local interest groups. The County of Parkland again sponsored the bird identification course and an open house in conjunction with their Heritage Days. Local cub-scout and girl-guide groups continued to use the Sanctuary for their regular program.

Administrative. The sanctuary is now leasing an additional 16 acres of land on the southeast corner of the existing Sanctuary. This was the County Park Reserve which we will now use as part of the Sanctuary. We will be allowed to develop trails and make minor improvements on this land.

Some problems have occurred with the land title transfer of the south quarter from the Clifford E. Lee Foundation to the CNF. CNF may be changing its policy regarding land ownership and hence the hesitancy in accepting title. We are currently discussing this matter with the CNF and the Clifford E. Lee Foundation.

Funding for our various projects continues to be a never-ending concern and occupies the full attention of a couple of board members.

Interpretation. This year Mrs. Proudfoot wrote an article on the background history of the Clifford E. Lee Nature Sanctuary and a description of the variety of birds. As a result of this data and that from our avifauna report, a bird checklist was produced. Jim Annett compiled a basic plant checklist. The two checklists have been set up and run off by our summer supervisor. A self-guided brochure has also been produced. This printed material will greatly assist our interpretative program.

Response to our slide tape presentations was very positive. These encounters help to increase people's awareness of the Sanctuary and often result in field trips.

Future Plans. Our future plans are to manage our resources according to the strategies that were laid down by the resource management subcommittee. The two strategies of water management and vegetation management will be aimed at biological diversity within the natural setting.

We are also preparing to work with Ducks Unlimited on a water manipulation project. This will be a very major project on which we will have to cost-share.

Interpretative work-shops will be offered this year on a variety of topics, and hopefully a couple of new pamphlets will be written. This will result from a grant with the County Parks and Recreation.

Many of our 1985-1988 objectives were met and hopefully we will continue to keep on track with our plans and goals in the next few years. A key to our whole operation is the continued support and good work of the members of the management committee.

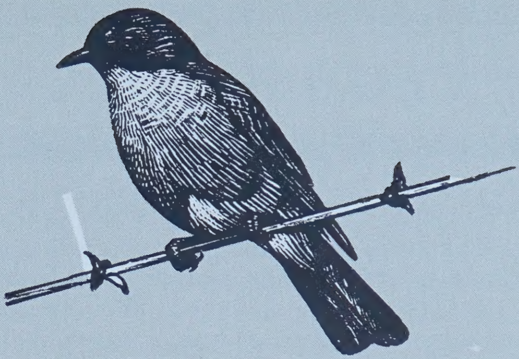
Marg Reine

Ellis Bird Farm Ltd. - 1985

Ellis Bird Farm Ltd. had a busy and successful year in 1985. Two important events involving the organization took place in 1985. The first was the hosting of the 8th annual North American Bluebird Conference in Red Deer in July. This turned out to be a great success, well and carefully organized and managed and probably the largest meeting of that society ever held. We had a host of interesting speakers on environmental and wildlife topics, and ran three sessions concurrently. We had short field trips, which also ran concurrently, and two long trips, a pre-conference tour of the prairies and badlands, and a post-conference trip into the foothills and mountains. Both were well attended and well received. Proceedings of the conference are currently being published.

On December 31, 1985, the contract between our operator, Wildlife Biologist Bryan Shantz and Union Carbide Canada Ltd., came to an end in accordance with the Operating Agreement of January, 1982. From this time on the working agreement will be a contract between Ellis Bird Farm Ltd. and Deer Ridge Consulting Ltd., Bryan Shantz's company. Union Carbide will continue to be the main source of funding for Ellis Bird Farm

Under the contract, the operator will be responsible for a host of duties as defined by the Operator's Manual, the Operating Agreement, the Articles of Association and the Memorandum of Agreement. Bryan's duties are, in part, to maintain and repair the 500 nest boxes on the farm and adjacent land; monitor each nest five times or more during the breeding season; record population characteristics for Mountain Bluebirds and Tree Swallows; band Mountain Bluebirds within the study area; conduct tours of the farm, up to three per week, May to July; report quarterly to the Ellis Bird Farm board of directors; mail out literature, sell and market prints, and with the board, represent Ellis Bird Farm to the media; present audio-visual programs on request to schools and other Alberta groups; serve on the NABS executive if required and attend NABS meetings and conferences; attend most Ellis Bird Farm meetings; produce booklets, a newsletter and other material for publication, including a projected history of EBFL; attend National Wildlife Week meetings and present our audio-visual program; instruct grade six students at the Lacombe outdoor school in early summer; and conduct an experimental study with 100 new design bird houses in 1986.



Finally, Bryan Shantz's summary of the 1985 Breeding Bird Report: approximately 500 nestboxes were monitored on the Ellis Bird Farm and surrounding region of the Prentiss area in 1985. Mountain Bluebirds arrived in the area March 17, somewhat earlier than average. A total of 77 pairs of bluebirds attempted nests, down from 93 last year. Including second nestings, 85 nests were attempted this year with 73 successfully fledging at least one young. The peak of hatching was the week of May 24 to 30, a week earlier than previous years. A total of 434 eggs were laid, 355 young were hatched and 341 young were fledged. Productivity was the highest recorded in five years of study, a direct result of the warm, dry weather of May and June. Although the breeding population was only 83% of the record population recorded in 1984, the number of young bluebirds fledged this year was 97% of the record number fledged in 1983. In total only 16 bluebirds were known to have died in the study area in 1985. All but two of these were nestlings. Banding was more limited this year due to conference planning; 199 bluebirds were banded. Twenty-eight bluebirds previously banded on the study area were recorded to have returned.

Tree swallows arrived in the area April 20. There were 148 nests this year, the lowest number recorded in the past five years.

House sparrows attempted to nest in 35 nestboxes. The nests, eggs and young were destroyed in all of these nests. Some adult sparrows were also destroyed.

House Wrens occupied 19 nestboxes in 1985. They were not responsible for any observed bluebird nest failures. One nestbox containing starlings was found. This box has an opening of 4.5 cm and will be replaced in 1986. Only about one half of the nest boxes were occupied by any bird species.

Fred Schutz

CLUB NEWS

Edmonton Natural History Club

The Club had a good year with an impressive list of speakers at its monthly meetings. Field trips were held in conjunction with the Edmonton Bird Club and though enjoyed, attendance was down.

The Club co-sponsored the successor to Audubon Films - Outdoor Film Adventures - and hopes to continue with a series through the 1986-1987 season.

Club members are fully represented on the Management Committees of the Wagner Natural Area and Clifford E. Lee Nature Sanctuary. They also responded to calls for input on the Whitford Lake Management Plan, the LRT crossing for the North Saskatchewan River, Bretona Slough proposed nature area, and the intrusion of recreational vehicles at Hastings Lake.

Club members manned a booth at Klondike Days Exhibition to advertise the role of natural history clubs in the environment and co-sponsored a STEP student to plan, construct, and then man an Environmental Awareness booth for use in Parks and at crowd gathering places like the Exhibition. It was good exposure for the Club, its volunteers, and was a source of new members and much public interest.

The Club is trying to publish the *Edmonton Naturalist* on a more regular basis, as long as members contribute articles and notes.

A new executive was voted in at the Annual Meeting January 14, 1986. Past President: Dave Cuthiell; President: Geoff Holroyd; Vice-President: Loney Dickson; Treasurer: Mike Quinn; Secretary: Marg Lewis.

The 1985-86 meeting schedule continued on March 11 with an unusual Tuesday night presentation in this year's Outdoor Film Adventure Series. John Wilson presented his film "North to the Top of the World." Some of the scenery shots were simply spectacular. On April 8, Derek Johnson presented a wide-ranging illustrated talk on "Spring-Flowering Plants in Alberta." Wayne Roberts, the Curator of the Zoology Museum at the University of Alberta, spoke on "Cold-Blooded Wonders" at the May 13 meeting.

The Club's 1986 field trip schedule began on March 9 with a cross country ski tour to the Strathcona Wilderness Center east of the city. A Boreal Owl search was scheduled for the Lesser Slave Lake area on the weekend of March 22-23. On April 20, the annual Spring Migration field trip to Beaverhill Lake, in association with the Edmonton Bird Club, took place. A camping trip to Dried Meat Lake, south of Camrose, occupied the weekend of May 3-4. May 10 saw "The Great Spring Moss Meander" take place in the Clyde-Redwater area. Bryologist Dale Vitt of the Botany Department at the University of Alberta led a trip to acquaint us with this common, but generally ignored, group of plants. The final trip of the spring season is a camping trip to the Kootenay Plains west of Rocky Mountain House on the weekend of June 7-8.

Pat Clayton and Derek Johnson

Edmonton Bird Club

In September the Edmonton Bird Club was forced to move into a new meeting room on the University Campus. The new location is working out well and attendance continues to be good. The club's membership remains around 100.

The club remains actively involved in the following programs:

- the "Birding Around Edmonton" pamphlet series continues to have good distribution particularly through the Provincial Museum and the John Janzen Nature Centre.
- Rainer Ebel was invited to represent the club at a meeting with the minister Don Sparrow and representatives from other natural history groups.
- the Beaverhill Bird Observatory (BBO) has been receiving strong support from members of the Bird Club, including substantial donations. The second BBO report is ready for printing and two graduate students will be working at the observatory this summer.
- the Wildlife Films continue to be fairly well supported, however, good attendance at the last two films was needed in order for the films to break even this season.

The club's Annual Banquet was held at the Mayfair Golf and Country Club on March 22. Fifty-six members and guests were present. Graeme Greenlee was the worthy winner of the 1986 Bird Club Award. Graeme attended the University of Alberta where he obtained a degree in Agriculture. He then went to work for the Alberta Research Council conducting soil surveys across the province. Graeme has been actively involved with naturalists' organizations for some time. He has served as President of the Bird Club and for a number of years he co-ordinated the Audubon Wildlife Film Series in Edmonton. The guest speaker at the banquet was Dr. Allan Yuill who took the group on a slide tour of southern Alberta through the seasons. His entire presentation was superb.

Margot Hervieux

Calgary Field Naturalists' Society

Membership in the Calgary Field Naturalists' Society now stands at 242. Monthly meetings continue with quality speakers including Bob Danielson on "The Growth and Decline of Alberta Forests - The Mushroom Factor." Jenifer Doty spoke to us about "The Importance of Genetics for the conservation of Endangered Species." Mary Lore presented "Wildlife of Southwest and South Africa 1984" and Steve Herrero talked about Grizzly Bears. This year's Christmas Quiz was won by Dave Elphinstone who has earned the dubious honour of becoming next year's inquisitor. Our General Meetings are held on the third Wednesday in each month (except July and August) and take place in Room 241 of the Engineering Building at the University of Calgary at 7:45 p.m. At our February meeting, Rick Servetnick of the Alberta Fish and Wildlife Division discussed "Wildlife Regulations enforcement in the Calgary area." Dr. Michael Wilson, a professor of geology at the University of Calgary, gave a presentation on the "Natural History of the Bow Valley since the Ice Ages" at the March meeting. Larry Halverson, a Parks Canada naturalist, told us about the "Natural History of Kootenay National Park" at the April meeting. Our Annual General Meeting and election of the Board of Directors will take place on June 18.

Field trips continue more or less regularly - usually two per month, one a CFNS-sponsored trip outside the city and the second co-sponsored by the City Parks and Recreation Dept. to a city natural area. Best attended trips in 1985 were an early spring trip to McKinnon Flats, a natural area along the Bow River recently acquired by Alberta Fish and Wildlife, and a fall trip to McGregor Lake to see Snow Geese. Also, a little further out of our way, a trip to Drumheller's new Tyrrell Museum was an "Indoor Field Trip."

The Bird Study Group continues to flock to Room 211 in the Bio-Sciences Building on the first Wednesday of each month - no exceptions. This group has a Bird Alert hot-line which is taken care of by Dave Elphinstone and can be reached at 237-8821. This is in addition to an active bird-alert system in which rare sightings are telephoned around a group of about 40 of our members. Following the hot success of the previous publications *Calgary Birds 1982* and *Calgary Birds 1983,* Doug Collister is hard at work compiling and producing a sequel entitled - you guessed it - *Calgary Birds 1984.* Four Christmas Bird Counts are supported by the group and this year we again won the trophy for most species.

The Botany Study Group attracted a faithful following for its Thursday evening outings in season, usually to a City Natural Area, but occasionally a longer outing to places such as Bow Valley Provincial Park.

The Natural Areas Group this season is concentrating on Nose Hill. This appears as a Natural Area to the public but in actual fact it is still 40% owned by real estate developers. Efforts are being addressed to the politicians to correct this situation.

CFNS recently published "Pioneer Naturalists of the Rocky Mountains and the Selkirks" written by Beryl Hallworth and Monica Jackson. This book can be acquired by sending $2.00 + 68¢ postage to: B. Hallworth, 3715 Underhill Place N.W., Calgary, T2N 4G3.

Probably the most significant event this past year for CFNS was presenting an Honorary Membership to Kay Morck. Kay has been involved with CFNS for many years. The presentation was made to Kay at the December meeting and we had a chance to see some of her excellent photography at that time.

Kate Jones is stepping down as representative to the Federation of Alberta Naturalists and Herta Przeczek will take on this position.

Don Stiles and Kate Jones

Red Deer River Naturalists

On Jan. 23, 1986, the Red Deer River Naturalists Society had their annual general meeting and executive elections. Dr. Sandy Murray was re-elected to his second term as president with Myrna Pearman staying on as vice-president. Replacing Carol Neufeld as secretary is Maxine O'Riordan, and Rick Leyland is replacing Betty McGhee as treasurer Eight directors were elected: Minnie Cunningham, Linda Gathercole, Ken Larsen, Carol Neufeld, Michael O'Brien, Jim Potter, Fred Schutz and

Hazel Shantz. Dorthy Murray remains on as our newsletter editor.

Highlights of the meeting included the reading of the President's Report and guest speaker Don Wale's presentation of a slide tape program about his trip to the Galapagos Islands.

The RDRN membership year runs from Jan. 1 to Dec. 31. This year the executive decided to offer membership renewals of three, five or one year. In 1985, the society membership increased to 260 individuals and 6 groups. Twenty-five complimentary subscriptions are supplied to various organizations.

Programs presented before the start of our summer outing schedule included: on Feb. 27 Rob MacIntosh speaking on Environmental Issues in Alberta, Mar. 27 Dick Dekker on Peregrine Falcons in Alberta, and April 24 Dr. George Scotter on Northern Parks.

Linda Gathercole

Lethbridge Naturalists' Society

Special Committees and Projects

The Handbook for Executive Members and ancillary functions was produced, thanks to the efforts of Elizabeth Hall, Doris Rhodes and other members. It will be useful and helpful, especially to new executive members.

Order of the Bighorn and Loran M. Goulden Awards. Duncan Macintosh was nominated for both these awards in 1985 in recognition of his great efforts and achievements with the Mountain Bluebird Trail.

Environmental Briefs

South Saskatchewan River Basin Planning Program. Teresa Dolman wrote a brief and presented it on behalf of LNS. The brief included viewpoints from the executive and Frank Harper and Allan Roberts and was well received at the meetings. P.R. Wilkinson presented a personal brief.

Westcastle Resource Plan. At short notice, Paul Wilkinson presented a verbal brief on behalf of the Society and this was mentioned in the Lethbridge Herald.

National Parks Development Questionnaire. Several executive members filled in these on different subjects, and these were sent off to Calgary.

Miscellaneous. Several items were covered by correspondence to Federal and Provincial Governments. These included sale of Provincial lands, Hidden Creek logging, winter opening of Highwood Pass, staff cuts in CWS, Eastern Slopes policy and deaths of 10,000 Quebec caribou.

F.A.N.

Despite approval of financial assistance up to $100 for a delegate to out of town FAN meetings no volunteers came forward. I attended the AGM in Red Deer, the May meeting in Lethbridge and the September meeting in Calgary as a delegate. We should continue to send a delegate, if possible, mainly to keep in touch with other societies and support FAN's environmental briefs and letters. FAN provides partial reimbursement to LNS for expenses of one delegate.

Winter meetings 84-85. Speakers and Topics were:
November - Dr. Gail Michener - Ground Squirrels.
January - Dr. Stuart Rood - Poplar genetics and distribution in S. Alta.
February - Frank Bishop of Fish & Wildlife Serv. - Fish in S. Alta. rivers.
March - Susan McGill and Joanne Kerrigan, Parks Canada - Centennial of the National Parks
April - Dr. P.R. Wilkinson - Hikers Guide to Ticks
May - Dennis Shigematsu - Travels in the South Pacific

Summer Field Trips - Destinations and Leaders.
April 20 - Waterton (Chestnut-backed Chickadee) - Michael O'Shea
April 27 - Dam at east end of Chin Lake - P. Wilkinson
May 18-20 - FAN meeting
May 25-26 - Spring Bird Count - Michael O'Shea
June 1-2 - Waterton Bird Count - Michael O'Shea
June 9 - Whaleback Ridge - B. Byers
June 14 - Plateau Mountain - B. Brown/Chris Pielou
June 19 - Fort Whoop-Up - S. Rood.
August 3 - Red Rock Coulee - D. Rhodes
August 17 - Westcastle Valley - Chris Pielou
Sept. 8 - Picnic - Russell Farm - 27 Present
Sept. 22 - Riverine Park, Lethbridge - Allan Roberts

Winter Meeting Night

A phone poll showed 27 to 4 in favour of a return to Friday night meetings. These will commence in January 1986. Membership has remained fairly constant at about 63 family and individual members, but it is hoped some ex-members will return with the change in meeting day.

Officers

President, Dr. P.R. Wilkinson; Vice-Pres., Dr. Chris Pielou; Treasurer, Penny Dodd; Rec. Sec., Lorraine Golsteyn; Corr. Sec., Joyce Wilkinson.
Directors, Teresa Dolman, Betty Luco, Doris Rhodes, Katherine Russell.

Paul Wilkinson

Bow Valley Naturalists

Our meetings take place on the 4th Wednesday of the month at 8:00 p.m. at the Banff Firehall. Summary of some of the meetings over the 1985-86 season.

September - "Twinning the Trans-Canada Highway in Banff National Park." Andy Anderson, environmental co-ordinator for the project, and Steve Logan, a park warden, discussed some of the challenges and problems which have been and will be faced and the mitigation measures which have been employed. The film produced for Public Works Canada entitled "No Ordinary Highway" was also shown.

October - "Carl Rungius, Painter of the Western Wilderness" with Jon Whyte. Jon, the BVN Vice-president, has co-authored, with Ted Hart, a new book with the above title. He presented a program on the life and times and work on this fine artist who spent much of his most creative time in the Banff area.

January - "A Naturalist in the Galapagos" with Mike Jackson, a graduate student from the University of Calgary.

February - "Costa Rica and Zimbabwe", a slide presentation by Brian Keating, an employee of the Calgary Zoo. This was also the club's annual meeting where the election of new officers took place.

March - "Ancient Life and the Tyrrell Museum of Paleotology" with Dr. Phil Currie of the Tyrrell Museum in Drumheller.

The Club is continuing with a series of brief presentations at each meeting by various members of the Warden Service who discuss current projects in which they are involved.

The club continues to monitor and comment on the Four Mountain Park Planning Program, the Banff Townsite Initial Environmental Evaluation, development activities in the Canmore Corridor and Twinning of the Trans-Canada Highway: Phase III (Sunshine Road to Icefields Parkway).

Assistance is being given to the Warden Service with coyote observations in the Banff townsite area to gather background information to deal with a "perceived coyote problem."

The club has written to Transport Minister Don Mazankowski expressing its concern that aerial sightseeing tours are not an appropriate activity for national parks and that regulations be prepared to control this activity.

Buffalo Lake Naturalists

Officers (1985)
President - Marvin Lohr; Secretary - Alma Weis; Treasurer - Lloyd Lohr; Directors - Lloyd Lohr, Marvin Lohr, Wilf Hewlett, Jim Burrell.

Monthly Highlights

April - Several members presented their ideas to the West Stettler Recreation Development Committee regarding the Fish Pond, the planting of trees and shrubs, the placement of bluebird houses and feeders, as well as the development of trails for hiking and skiing. Shuchburgh Slough (Leo's Lake) suggested as a possible candidate for Natural Area status.

May - Hike to Leo's Lake.

June - Bus trip to Devonian Botanic Gardens west of Edmonton.

September - Bus trip to Tyrrell Museum of Paleotology at Drumheller. Photos and slides shown of Kananaskis field trip.

November - Newsletter with highlights of outings to be printed and circulated to members. Slides shown of Alaska and Churchill.

January - Annual General Meeting.

A.J. Weis

NOTES AND NEWS

Endangered Wood Bison Return to the Yukon

The transfer in March of 35 wood bison from Elk Island National Park in Alberta should bring the bison a step closer to being removed from the endangered species list. The animals are being transferred to the Nisling River Valley, in the south-western Yukon by the Canadian Wildlife Service of Environment Canada in cooperation with the Department of Renewable Resources and Parks Canada officials.

At the turn of the century it is estimated there were as few as 300 wood bison in existence. Today there are approximately 2000 in total; three free-roaming herds, including the semi-captive herd of about 200 at Elk Island, a wild herd of 1500 in the Mackenzie Bison Sanctuary at Great Slave Lake, N.W.T. and a small herd of 21 in the South Nahanni-Liard River Valley, N.W.T. In addition, seven small captive herds exist elsewhere in Canada, the United States and Germany.

In July, 1984, the Canadian Wildlife Service and the Yukon Fish and Wildlife Branch signed a co-operative agreement to re-introduce wood bison into their former range in the Yukon.

A five-square kilometre holding corral for the bison was completed near Carmacks, Yukon in October 1985, with funding from the NEED program, Environment 2000, Katimavik, Yukon Department of Renewable Resources, Federal Department of Environment, Yukon Fish and Game Association, Yukon Outfitters Association and Safari Club International. The transferred wood bison will be maintained in the enclosure, and starting next spring, the locally-produced offspring will be set free. It is hoped that the released bison will remain in the area and establish a home territory.

The wood bison is the largest land mammal in North America and a mature bull may weigh in excess of one tonne. It differs only slightly in appearance from its cousin, the plains bison, being somewhat larger and darker in colour.

New Painting Unveiled to Raise Funds For Wildlife

The original painting to be used for Canada's 1986 Wildlife Habitat Stamp was unveiled at Toronto's Sportsmen's Show.

The painting, rendered by J. Fenwick Lansdowne, was commissioned by Wildlife Habitat Canada. It features a pair of Canvasback ducks in a wetland setting and will appear on the 1986 Wildlife Habitat Conservation Stamp and limited edition art print. Both products will go on sale August 1, 1986.

Canada's first conservation stamp and art print, launched last August, were unqualified successes. Each has raised over $2 million, money that is already being put to use in innovative ways to conserve habitat for wildlife in Canada.

Migratory game bird hunters, who must purchase the federally-issued Migratory Game Bird Hunting Permit, are also required to purchase the 1986 Wildlife Habitat Conservation Stamp. The stamp must be affixed to the hunting permit to validate it. Both the stamp and the permit will be available from Canada Post in August, 1986. Additional copies of the Wildlife Habitat Conservation Stamp will be sold by Canada Post's Philatelic Service.

Wildlife Habitat Canada works closely with the federal and provincial governments and with other non-government organizations in its role as a supporter of land acquisitions and innovative pilot projects.

The Wildlife Habitat Canada Foundation, which was inaugurated 2 years ago, received $3 million in start-up funds from the federal government. Environment Canada, through the Canadian Wildlife Service, works closely with the Foundation, especially with regard to wetland conservation across Canada.

Save South Moresby Caravan

The South Moresby Wilderness has been identified as an area of national and international significance. It is the only place in Canada, and one of only twelve areas in the world, where world heritage natural history and cultural features are represented in a single location.

Incredibly, this global treasure is being clearcut logged as you read this. During the past decade, the South Moresby wilderness has been studied by three government-appointed committees. Throughout that time, logging and mineral claim staking have continued unabated. Today the northern 25% of the proposed study area has been lost and logging continues while yet another Provincial government committee, the Wilderness Advisory Committee, studies its fate.

Canada has the second largest land area of any nation on earth and one of the highest standards of living. We take just pride in our national parklands and wild areas, and we export our knowledge and conservation ethics to the world. Why then is it so difficult to save South Moresby, an area that represents only 15% of the small Queen Charlotte Islands, and only two tenths of 1% of the productive forest lands of B.C.? The B.C. Environment Minister has called South Moresby "the jewel in the crown", yet his cabinet fails to take the steps necessary to secure its protection.

To date, every major environmental group in Canada has called for South Moresby's preservation. Hundreds, perhaps thousands, of support letters have poured into Victoria, many of them never to be read or answered. Citizens are feeling frustrated in their twelve-year-long attempt to influence a positive decision through the democratic process. South Moresby is symbolic of all the park and wilderness struggles we are undergoing.

The Save South Moresby Caravan was designed to turn that sense of frustration into a rededication, a celebration. We wanted to send a clear message to the B.C. government. South Moresby can and must be saved. All Canadians have the right and an obligation to be part of a decision that will speak for us as a society and as a nation.

Thom Henley
Save South Moresby Caravan, Natural Coordinator

Editor's Note: We hope to be able to include a summary and commentary of Caravan events in the next issue of the AN.

ANNOUNCEMENTS

Operation Ground Owl

1986 will be the first year of a three-year program to inventory **Burrowing Owls** in Alberta. Patterned after work done by Brian Ratcliffe in Manitoba, a critical component of this program will be a public awareness campaign. Publicity through newspaper and radio interviews as well as posters/flyers distributed to rural areas will encourage the public to report active nesting sites they are aware of. Any persons knowing of active nesting locations are urged to contact:

Colin Weir, P.O. Box 1711, Lethbridge,
AB. T1J 4K4,
Days 345-4466, Evgs. 345-4262.

Also, special thanks to the sponsors of this project: Alberta Fish & Wildlife, World Wildlife Fund Canada, Robinson's Camera Centres Ltd., Coaldale Insurance Ltd.

Trumpeter Swan Society Conference

This conference is being held at the Trumpeter Motor Inn in Grande Prairie 3-6 September 1986. The conference will include five paper sessions, a director's meeting and a field trip. The paper sessions will cover an historical and management overview of Trumpeter Swans in Canada, particularly the Grande Prairie region; update information on studies from the Tri-state regions where most Canadian Trumpeters overwinter; status reports of individual populations and an overview of the 1985 North American survey of Trumpeter Swans and their habitat; reviews of current reintroduction programs; and information on swan nutrition and habitat use.

A day long field trip is planned for 5 September. This field trip will show the diversity of habitats used by breeding and non-breeding swans near Grande Prairie and provide an overview of the agricultural and industrial activity in the area. A banquet is scheduled for the evening of September 4.

For further information or to register contact Gordon Holton, Wildlife Biologist, Fish and Wildlife Division, Bag 900-26, Peace River, Alberta T0H 2X0. Phone (403) 624-6405.

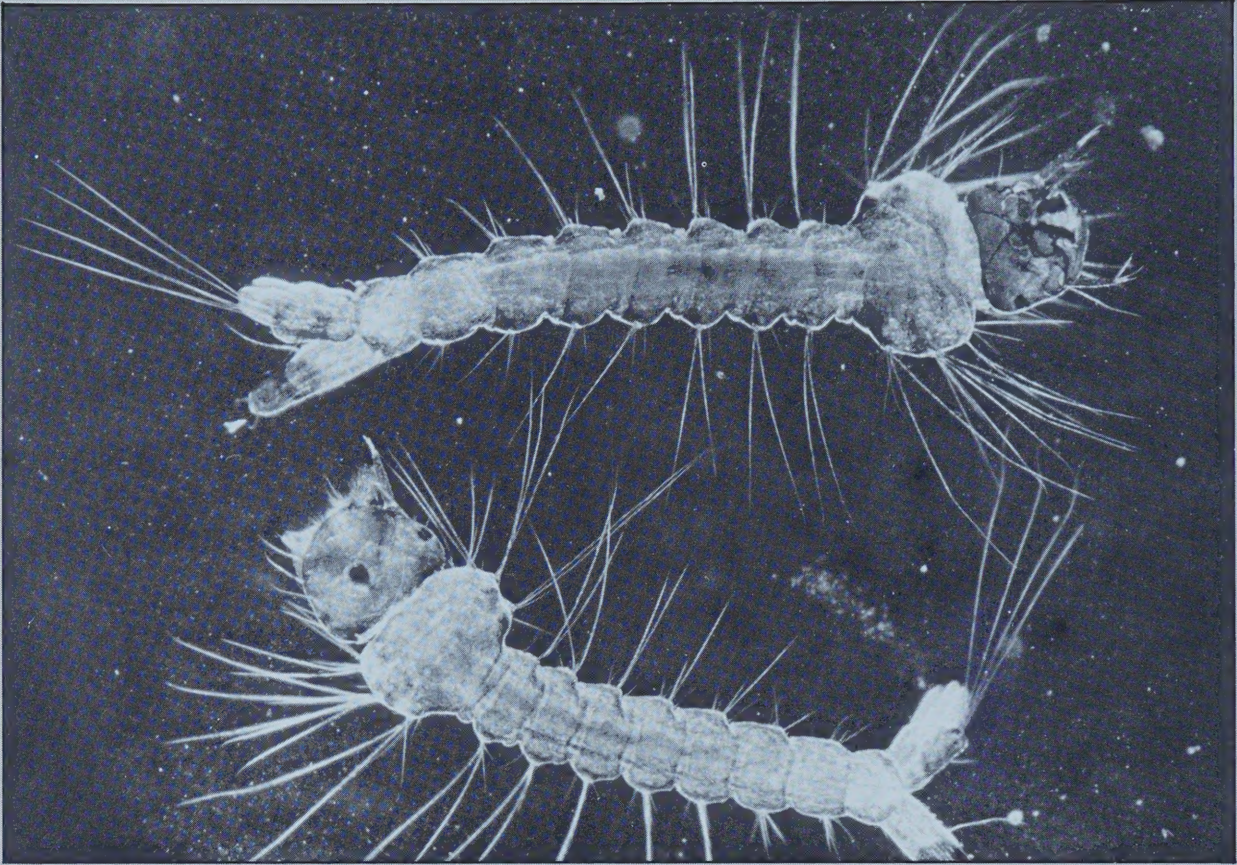
DOUBLE L SADDLERY & LEATHER SHOP

SALES • SERVICE • RENTALS

ON SPECIALIZED OUTDOOR AND CAMPING EQUIPMENT FOR THE
X-COUNTRY SKIER • HIKER • BACKPACKER • HORSEPACKER • CANOEIST

Repairs on all kinds of equipment
10% discount on new equipment to Naturalist Club Members
All products personally tested

LLOYD M. LOHR
Box 1414, Stettler, Alberta T0C 2L0
Phone (403) 742-3846



Mosquito larvae *are commonly seen near the surface of any small body of water, even puddles. Often called "wigglers", they swim downward with a rapid wiggling motion when disturbed. They are easy to identify by their large thorax and their habit of lying quietly just below the surface with their respiratory tube projecting through the surface film. They feed on algae and microscopic organisms filtered from the water with fine mouth hairs. Typically 3 to 10 mm long, they will change into pupae with an entirely different appearance before becoming adults. (Photo and caption by Tom Branch.)*

F.A.N. Membership Fees Are: Regular $10 per year; Supporting, $25 or more per year (with excess over $10 being deductible from your taxable income):

ENCLOSED IS $_____ COVERING A _____ YEAR REGULAR MEMBERSHIP

ENCLOSED IS $_____ COVERING A _____ YEAR SUPPORTING MEMBERSHIP

NAME ____

ADDRESS ____

________________________ POSTAL CODE ____________________

SEND TO:
FEDERATION OF ALBERTA NATURALISTS
Box 1472, Edmonton, Alberta T5J 2N5

Arctic Loon Nesting in Alberta

Ernie Kuyt and J. Paul Goossen

The southern extent of the breeding range of the Arctic Loon in Canada and its summer distribution in the southern Northwest Territories (NWT) and northern Alberta are imperfectly known. Arctic Loons have been observed during summer in northwestern British Columbia, northern Alberta and southern Mackenzie (Godfrey 1966; AOU 1983) and although they are known to breed in some of these areas (AOU 1983), Godfrey (1966) states that breeding evidence from the northern parts of British Columbia, Alberta and Saskatchewan is unsatisfactory. Recently, Campbell *et al.* (1985) summarized 16 Arctic Loon breeding records from northern British Columbia, including five nests with eggs observed between 1978 and 1981. In this note we record occurrences of Arctic Loons in the southern NWT and in northern Alberta and we document the first record of a nest and eggs from Alberta.

On 2 May 1978 during an aerial survey over the Whooping Crane breeding range in Wood Buffalo National Park (WBNP), E. Kuyt and B.E. Johnson sighted two Arctic Loons in a shallow lake near the Sass River (Table 1, Figure 1). These two observers, singly or together, during similar surveys in July 1978, May 1979, June 1979 and May 1980, saw pairs of Arctic Loons near the Sass and Little Buffalo rivers (Table 1). No additional records were obtained for 1980 and none were obtained for 1981. Paucity of data for these two years coincided with a serious drought in WBNP, particularly in 1981. We have six sightings for 1982, two from 1983, three from 1984 and nine from 1985 (Table 1). Our involvement in spring studies of Whooping Cranes in the area and our virtual absence during July predetermined that most of our sightings were made in May and June.

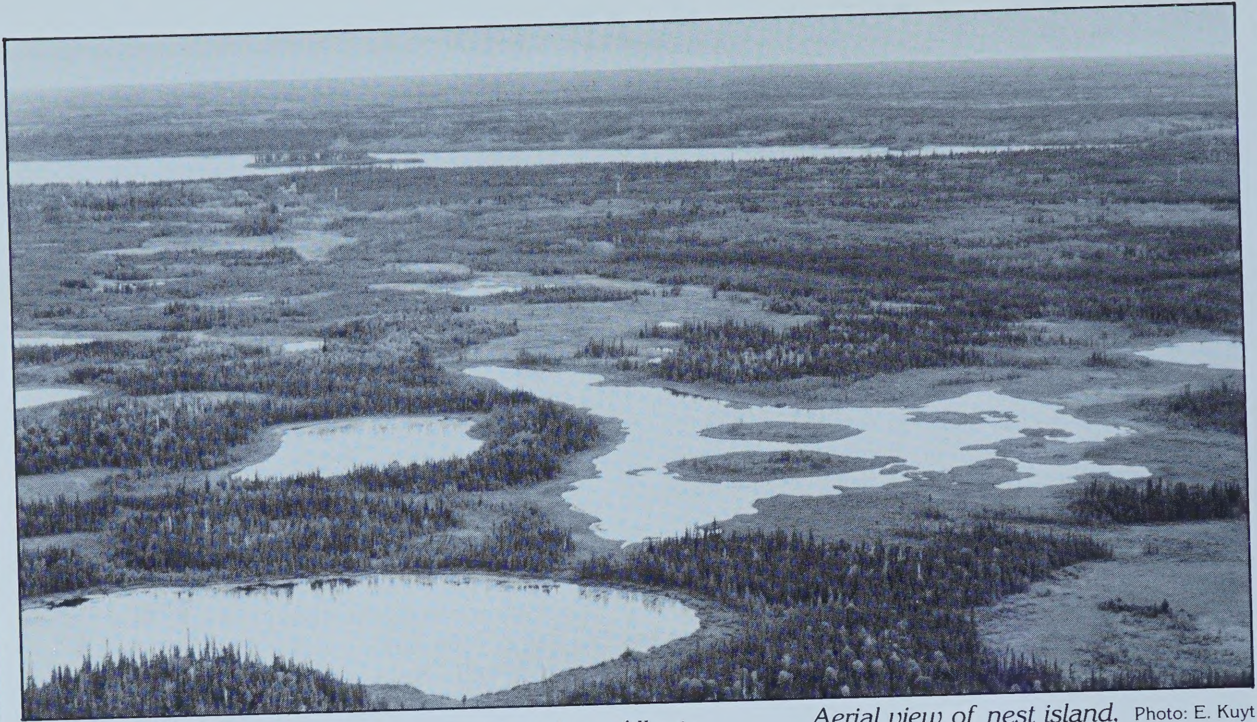
Arctic Loons observed from the air usually dove when we passed overhead, even though the aircraft was generally at 800 m or higher. Often the splashing dive of the startled bird attracted our attention. Birds at rest or swimming quietly on the surface of ponds or lakes were easily separated from the Common Loon, also occasionally seen. The diagnostic silvery-grey head and neck area of the Arctic Loon was clearly discernible even when birds were observed swimming under water in shallow ponds.

Sightings made in July 1978 and from 1982-1985 (Table 1) in the same small series of shallow wetlands along Highway #5, about 60 km west of Fort Smith, NWT (Figure 1), most likely involved two birds at the most or perhaps even the same birds. Those wetlands were visited by Kuyt and Johnson on at least five other occasions from 1978-1981 but no loons were seen. On 12 May and 9 June 1985, Kuyt and Goossen travelled by canoe through the same marshes. On both occasions we saw a pair of Arctic Loons at close range in the same small tree-lined pond, but we failed to find a nest.

On 10 June 1985 the authors made a birding trip by canoe through a series of small boreal forest lakes immediately northeast of a lake locally called "Four Mile Lake", about 7 km south of Fort Smith, NWT. Kuyt made the same trip several years earlier and observed Common Loons but no other loons. We were surprised to see an Arctic Loon in the first lake north of Four Mile Lake, where on innumerable occasions we have looked at birds without having seen Arctic Loons more than once (Goossen, 11 July 1982, Table 1). About an hour later as we canoed around a large island in the last lake in the chain of about six lakes, we saw an Arctic Loon and almost immediately a second one swimming away from a small island. We paddled to the islet and found a nest containing two eggs, dark green-olive in colour, with black blotches. The nest was a soggy mat of green vegetation consisting of bog bean (*Menyanthes trifoliata*) and sedge (*Carex limosa*), with a base of moss (*Sphagnum* sp.). The nest island was low, flat, crescent-shaped and measured about 9 m x 4.5 m. The only plant species observed on the islet were those described as nest material.

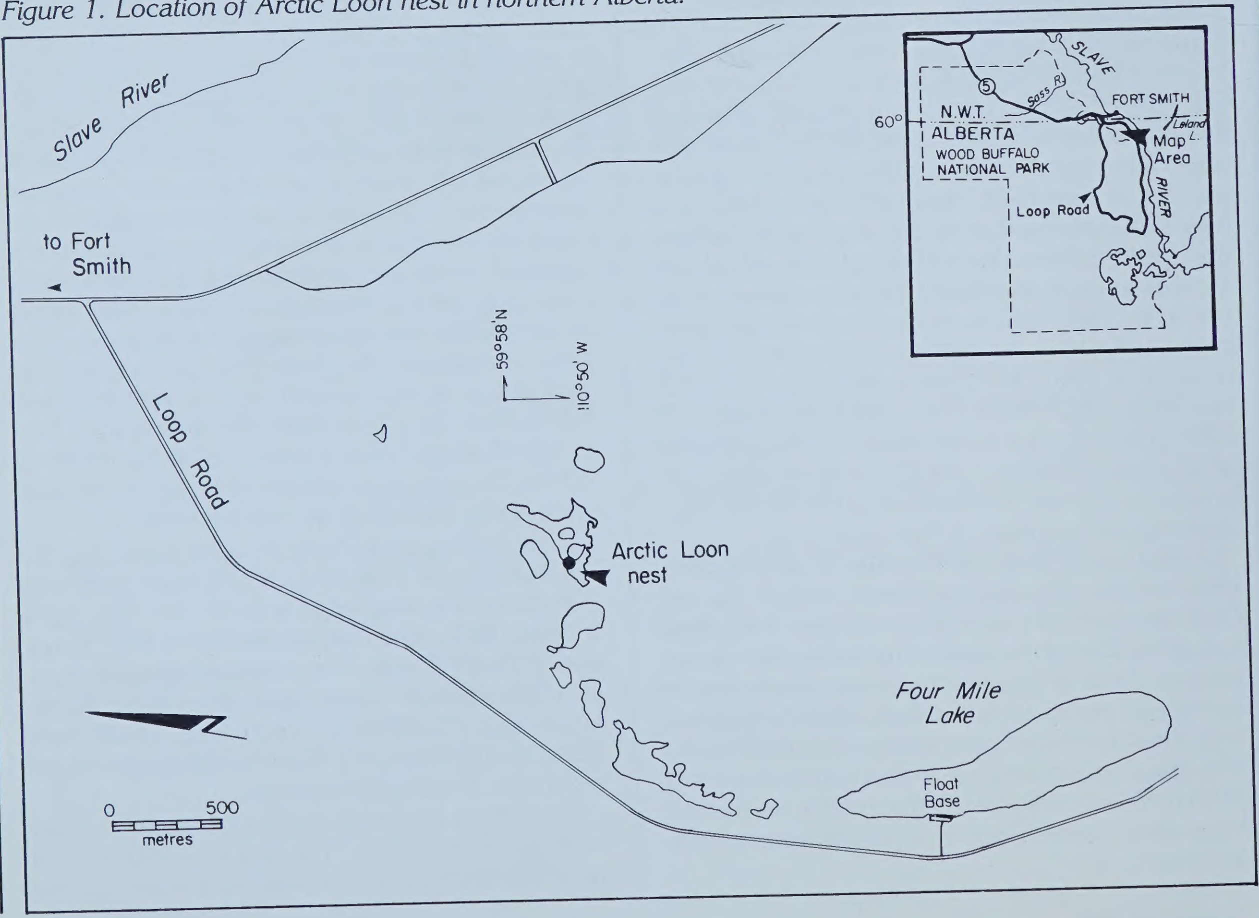
The nest, located 25 cm from the water, was 43 cm across and 5 cm high. Pond water depth at 1 m from the nest edge was 55 cm. The eggs weighed 90.0 g each and measured 79.5x45.5 mm and 77.5x47.0 mm. These measurements compare closely with those taken from three Arctic Loon eggs (72x49 mm, 76x51 mm, 74x46 mm) examined by Kuyt in 1973 from two nests found along the Beaufort Sea coast.

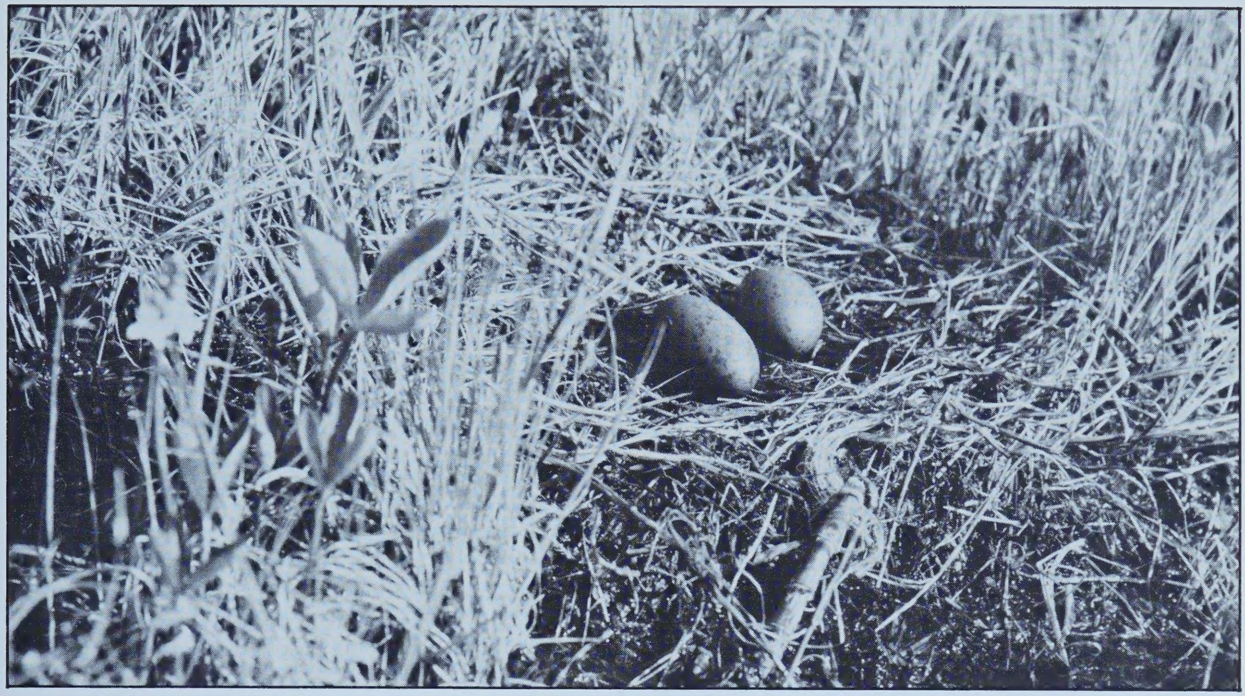
One of the eggs was briefly placed in the pond water to estimate age. The egg sank with almost no tilt from the vertical. Whooping Crane eggs and



Aerial view of nest island. Photo: E. Kuyt

Figure 1. Location of Arctic Loon nest in northern Alberta.


Slave River
to Fort Smith
Loop Road
59°58'N
110°50' W
Arctic Loon nest
Four Mile Lake
Float Base
0
500
metres
SLAVE
5
Sass R.
FORT SMITH
60°
N.W.T.
ALBERTA
WOOD BUFFALO NATIONAL PARK
Leland L.
Map Area
RIVER
Loop Road



*Nest of Arctic Loon, northern Alberta. Flowering bogbean (*Menyanthes trifoliata*) at left.* Photo: E. Kuyt

Arctic Loon eggs have similar incubation periods (29-30 days for Whooping Cranes, Kuyt 1982a, and 29 days for Arctic Loons, Godfrey 1966) and a Whooping Crane egg displaying these characteristics of flotation would be up to 12 days old (see also Miles and Bizeau 1983). The loon's egg was probably laid during the last few days in May and would have hatched about the end of June. After the test, the egg was dried and replaced in the nest.

We know of only one Alberta breeding record, the sighting of a pair of adults and a downy young near Leland Lake, Alberta (Hohn 1972, Figure 1). In his paper, Hohn also discusses the uncertain origin of a set of Arctic Loon eggs taken east of Fort Chipewyan in early June 1885. Allen (1956) reported Arctic Loons with downy young on a number of ponds near the Sass River during his exploration in the area from 6 June-2 July 1955.

Arctic Loon nesting habitat, northern Alberta.

Photo J.P. Goossen

We believe our sighting to be the first documented Arctic Loon nest record for Alberta and the second definite breeding record for that province. Allen's (1956) and our records for the Slave River lowlands also indicate that Arctic Loons breed in areas other than the Precambrian Shield (Leland Lake) where Hohn saw them.

Salt and Salt (1976) view the Arctic Loon as a rare transient in the southern prairie provinces. On the other hand, Sadler and Myres (1976) regard this loon as a regular fall migrant in Alberta, even though that viewpoint is supported only by six observations involving mostly single or paired birds seen in September or October from 1964-1970. In this context, an additional observation should be recorded.

On 21 September 1981 during a study of migrating Whooping Cranes, Kuyt (1982b) observed a flock of about 75 Arctic Loons on a small lake about 40 km northeast of Fort McMurray, Alberta. Inclement weather (fog, rain and dense smoke) that day may have prevented or delayed these birds' migration. At 1015 h the loons took off and circled the lake several times, remaining just below the overcast. Then about 10 birds landed, "drawing" the rest with them. During the next half hour the loons repeated the same procedure several times. At 1050 h the loons remained aloft, flew into the overcast and disappeared, except for three birds which again returned to the lake, only to take off several hours later.

In North America, Arctic Loons winter mainly along the Pacific coast from Alaska to southern Baja California (Robbins *et al.* 1966; AOU 1983). It is possible that at least during fall migration, these birds pass through Alberta in sizable flocks. Perhaps their flight to wintering areas on the British Columbia coast (Godfrey 1966) is direct, and consequently few Albertans see them.

We thank B.E. Johnson for survey records from 1978-1980, G.W. Scotter and J.H. Hudson for determination of the sedge we collected from the Arctic Loon's nest island, S. Popowich for preparation of the figure, and Lube Strembitsky for typing the various drafts.

Literature Cited

Allen, R.P. 1956. A report on the Whooping Crane's northern breeding grounds. Suppl. to Res. Report No. 3. Nat. Aud. Soc., New York. 60 pp.

American Ornithologists' Union. 1983. Check-list of North American Birds. Sixth Edition. Lawrence, Kansas. 877 pp.

Campbell, R.W., B.M. VanDer Raay, I. Robertson, and B.J. Petrar. 1985. Spring and summer distribution, status and nesting ecology of the Arctic Loon, *Gavia arctica* in interior British Columbia. Can. Field-Nat. 99(3):337-342.

Godfrey, W.E. 1966. The birds of Canada. National Museum of Canada Bulletin No. 203. 428 pp.

Hohn, E.O. 1972. Arctic Loon breeding in Alberta. Can. Field-Nat. 86:372.

Kuyt, E. 1982a. Whooping Crane. Hinterland "Who's Who", issued by Minister of Environment, Canada. 6 pp.

Kuyt, E. 1982b. The far North. North Dakota Outdoors 45:4-11.

Miles, J.E. and E.G. Bizeau. 1983. Techniques for predicting the hatching dates of wood duck clutches. J. Wildl. Manage. 47:204-209.

Robbins, C.S., B. Bruun, and H.S. Zim. 1966. Birds of North America. Golden Press, New York. 340 pp.

Sadler, T.S. and M.T. Myres. 1976. Alberta birds 1961-1970. Prov. Mus. of Alberta Occas. Paper No. 1. 314 pp.

Salt, W.R. and J.R. Salt. 1976. The Birds of Alberta. Hurtig Publishers, Edmonton. 498 pp.

Authors' Address:
Canadian Wildlife Service, 2nd Floor, 4999-98 Avenue, Edmonton, Alberta T6B 2X3.

Table 1. Sight records of Arctic Loons, southern Northwest Territories and northern Alberta.

Date	**Observer**	**Sighted from air (A) or ground (G)**	**Number**	**Location***
2 May 1978	Kuyt & Johnson	A	2	Sass River, NWT
July 1978	Kuyt & Johnson	G	2	Little Buffalo River, NWT
16 May 1979	Johnson	A	2	Sass River, NWT
20 June 1979	Kuyt & Johnson	A	2	between Sass and Klewi rivers, NWT
14 May 1980	Johnson	A	2	Sass River, NWT
10 May 1982	Kuyt	A	2	Nyarling River, NWT
22 May 1982	Present authors	G	2	Little Buffalo River, NWT
16 June 1982	Present authors	A	2,1	Klewi River, NWT
19 June 1982	Goossen	G	1	Little Buffalo River, NWT
11 July 1982	Goossen	G	2	near Four Mile Lake, Alberta
15 May 1983	Present authors	G	1	Little Buffalo River, NWT
30 May 1983	Kuyt	A	1	Sass River, NWT
10 May 1984	Kuyt	G	1	Little Buffalo River, NWT
4 August 1984	Goossen	A	2	Klewi River, NWT
5 August 1984	Goossen	A	2	Klewi River, NWT
10 May 1985	Kuyt	G	1	Little Buffalo River, NWT
11 May 1985	Present authors	A	1	Little Buffalo River, NWT
11 May 1985	Present authors	A	1	Klewi River, NWT
12 May 1985	Present authors	G	2	Little Buffalo River, NWT
9 June 1985	Present authors	G	2	Little Buffalo River, NWT
10 June 1985	Present authors	G	1	near Four Mile Lake, Alberta
10 June 1985	Present authors	G	2	nest, NE of Four Mile Lake, Alberta
8 August 1985	Goossen	A	1	near Four Mile Lake, Alberta
9 August 1985	Present authors	G	2	near Four Mile Lake, Alberta

*Loons were observed *near* rivers, not on rivers.

Evaluation of Wolf-Ungulate Predation near Nordegg, Alberta

First Year Progress Report, 1983-84. Peter L. Clarkson, Ken P. Schmidt and John R. Gunson. Alberta Fish and Wildlife Division. 53 pages. Second Year Progress Report. Ken P. Schmidt and John R. Gunson. Alberta Fish and Wildlife Division. 53 pages.

Reviewed by Dick Dekker

To determine the effect of wolves on elk and other ungulates in the Nordegg area, the Alberta government conducted a two-year research project from 1983 to 1985. Members of two wolf packs were radio-collared and their movements and predation rates monitored. Following are some of the highlights of the study, summarized from the two progress reports released by the Fish and Wildlife Division.

Wolves were at low densities (1 wolf/204 km^2) throughout the study area. During the first winter of research, the so-called Baldy pack, that denned in foothills terrain near Nordegg, consumed only moose (7 of 12 kills) and deer (59% of 86 scats). By contrast, the Blackstone pack, located in more mountainous terrain, including a portion of Jasper National Park, consumed mostly elk (16 of 22 kills) and deer (59% of 86 scats) during the 1983-84 winter. These wolves were found to take more elk than hunters in this trophy-only (5 antler points or better) zone, and the authors of the first-year report tentatively conclude that wolf predation was an effective limitation on the elk population.

The second-year report presents more evidence in support of the above claim. Elk populations in the study area were believed to be declining, and wolf predation appeared to be the major cause of elk mortality.

During the early 1960s, after large-scale wolf-poisoning campaigns and a series of mild winters, elk numbers in the Nordegg area had been much greater than they are now. Annual harvests by hunters for the years 1963-65 averaged five times higher than the figures for 1975-84. During the top years, hunting seasons were long and included elk cows, whereas only bulls could be taken in the 1970s and 80s. No doubt, the high hunting harvests of the 1960s contributed significantly to the subsequent elk population declines.

In their second-year progress report, the authors estimate total elk numbers for the study area at 500. Calf production of about 40 per 100 cows was low (as compared to 61/100 in western Washington) and dropped even lower during the course of the summer, a result of mortality. During late July, some elk herds in the Blackstone wolf pack territory were found to have only 7 or 8 calves per 100 cows! The elk calving grounds were at timberline in the mountains. The wolves took their pups to these alpine regions in early July, vacating the den, which was located in the Brazeau River valley inside Jasper National Park. During fall and winter, the Blackstone pack travelled widely on provincial lands as far away as 50 km from park boundaries.

During winter, the researchers flew aerial surveys in helicopters or fixed-wing aircraft, locating the wolves by the signals emitted from their radio collars. A total of 97 ungulates, killed by the wolves, were found and examined. The larger Blackstone pack (10-14 members) made a kill, on average, every 2.6 days. The Baldy pack (7-10 members) killed an ungulate every 4.8 days.

The summer food habits of both packs were studied by analyzing a total of 416 wolf scats, collected along trails and near dens.

The researchers had several opportunities to observe the wolves hunting and chasing their prey. Of course, they were not always successful in making a kill. Elk displayed several strategies to lessen the chance of being caught; (1) the use of water for escape; (2) a preference for open areas to prevent sneak attacks; (3) grazing and resting in groups, which reduces the individual's risk of being selected by the wolves. These well-known anti-predator strategies were described in the first-year report. The second-year report adds a new one; upon sighting wolves, elk would run to the top of cliffs or steep hillsides and face their pursuers, with the elk's vulnerable backside over the edge of the precipice. (I found evidence of such escape tactics in Jasper National Park.)

The report gives some interesting anecdotes on the feeding habits of the wolves. The Blackstone pack killed a cow moose and her calf one day after consuming a mule deer. The calf was pulled down after a chase of 30 metres, the cow after about 75 metres, and both were finished in two-and-a-half days, which means that each wolf ate 40-45 kg of meat, bones and skin. The Blackstone pack scavenged less often than the Baldy pack. The latter was located near the carcasses of two bull moose with locked antlers. (During the rutting season, sparring bull moose sometimes become entangled by the tines on their antlers, with fatal consequences for both animals.) Evidently, the Baldy pack was chased off this windfall by two grizzly bears, at least temporarily.

The report gives a fascinating account of the behaviour of a female wolf called Dolly. Captured and radio-collared in August of 1983, she did not rejoin the Baldy pack for three weeks, during which she scavenged from a road-killed moose for 5-6 days. In winter, she travelled with the pack, but sustained a wound to her left hind leg, causing her to limp badly and lag behind the other wolves. In spring, she separated again and survived mainly by scavenging. However, she was believed to have denned in that year, because she was accompanied by two pups when she was seen with the pack the following November. On three legs, she managed to stay with the group, covering daily distances of up to 27 km. In February 1985, she again left the pack and travelled extensively, eventually crossing the North Saskatchewan River into a new range, where seven wolves had been killed by two trappers, the previous winter.

Mortality among the Blackstone and Baldy packs also proved to be high, resulting in the loss of all radio-collared members by late 1985. Four adult wolves were shot by hunters, one was killed by a cougar (!), and one died of unknown causes.

Two members of the so-called Baldy pack, radio-collared and studied by the Alberta Fish and Wildlife Division. Wildlife technician Ken Schmidt took this photograph from a helicopter near Nordegg, Alberta.

The report also gives some information on the fate of 100 elk that were translocated from southern Alberta and Elk Island National Park, and released in the Nordegg area to boost the local population. Apparently, a number of these introduced elk were unable to adapt to their new wilderness environment and died of malnutrition or wolf predation.

Habitat improvement?

In their first-year progress report, the researchers advised the management that the best way to increase elk productivity in the Nordegg area would be through habitat improvement, which would have greater long-term benefits than predator control or restrictive hunter harvest. Apparently, in the mountainous study area, good elk habitat is getting scarcer because of forest maturation and the dense growth of bog birches on formerly open meadows. Elk are predominantly grazers, and adequate availability of grassland is especially critical during winters with deep snow.

In my opinion, prudent and site-specific habitat management in the vast Alberta wilderness remains an unrealistic possibility, although some biologists seem to think that habitat improvement is just a matter of letting wildfires run their course. The Alberta Wildlife Division might be well advised to adjust expectations for the Nordegg area; the habitat will never be top quality for elk. If Alberta hunters want to boost elk hunting opportunities in the province, wouldn't it be best to concentrate on careful management of the prime elk ranges in the foothills of southwestern Alberta where there are no wolves?

Wolf control?

To find out whether or not elk herds will respond to a reduction in wolf numbers in the Nordegg area, Alberta government officials are teaching trappers the finer points of capturing wolves. Carcasses of road-killed ungulates, provided by the Fish and Wildlife Division, are to be used as bait to attract predators to a site where steel snares are rigged in pathways between the brush. Other ways of actually assisting trappers to kill more wolves are being considered.

Apparently, the Alberta wildlife managers are shying away from more rigorous ways of reducing the wolf population in the Nordegg area. Their decision to refrain from government wolf control was no doubt influenced by the 1984 public protests against the aerial kills in British Columbia and Alaska.

“Dogged” Pursuits of Deer by Lone Wolves

Dick Dekker

The following unusually long chase of a deer by a wolf was observed by Mark Korb (Mech and Korb 1978) from a small aircraft in Minnesota on 25 November 1977.

At 1210 h, four wolves began chasing a White-tailed doe. One wolf, a radio-collared two-year-old female, gained the lead and approached the deer to within 40 m. It then fell behind, but kept up the chase, whereas the other wolves soon gave up. For the next two hours, the deer ran on through spruce bogs, over hardwood ridges and across frozen lakes. Sometimes it gained on the wolf, and vice versa. Once the wolf got to within five metres of the deer, but at other times it fell to about 800 m behind. At 1420 h, when the observation ended, the wolf was still following the deer's trail, although the deer could not be seen. This point was 20.8 km travel distance from the beginning of the chase! The ultimate end of the chase, whether or not the deer was caught or escaped, was not determined.

The above publication was of particular interest to me after seeing evidence of two long chases of deer by single wolves in Jasper National Park during January 1986. On both occasions, I was walking quietly on a semi-open ridge in the Athabasca Valley. In the first incident, a deer ran by with open mouth, tongue protruding, as if it had been running for a long distance. The wolf was quite far behind. It saw me and stopped on the ridge a hundred metres away. The deer, a White-tailed buck, kept on running for about one km, passed closely by my companion, Peter DeMulder, and continued over open terrain for another km or more until it disappeared from view in the woods. The buck looked exhausted and disoriented. Peter saw it crash through clumps of thick brush instead of going around the tangles. Twice it fell on a patch of ice, and lay for a minute, licking its front foot, which was bleeding, probably cut by crusted snow or ice.

In the second incident, a running Mule Deer doe approached me within four metres and stood for a moment, panting and glassy-eyed, until it ran by at arm's length. I quickly moved off the open ridge and crouched by a spruce. Seconds later, a gray wolf, its mouth open, red tongue lolling, galloped along the ridge. About six metres away, the wolf suddenly became aware of me, spun around and ran back the way it had come. Evidently, in both cases my presence had interrupted a natural sequence of events.

I wrote Dr. David Mech and asked about the hunting habits of lone wolves. He replied that not much was known, but tracking prey by scent was evidently common. Perhaps, long chases are more typical of young wolves that have not yet learned that long chases are unproductive. I wonder whether lone wolves have to rely on perseverance, whereas wolf packs can benefit from cooperation and are often successful in cutting off a deer's escape after a short chase.

To me, the above observations in Jasper Park gave new meaning to the phrase "dogged pursuit."

Literature Cited

Mech, L. David and Mark Korb. 1978. An unusually long pursuit of a deer by a wolf. Journal of Mammalogy 59(4): 860-861.

Author's Address
3819-112A Street, Edmonton, Alberta T6J 1K4.

Summary of Canadian Wildlife Service Whooping Crane Studies for 1985

Ernie Kuyt and J. Paul Goossen

Information obtained from the Aransas National Wildlife Refuge near Corpus Christi, Texas indicates that the migratory Whooping Crane population, now in winter quarters there, is the highest it has been since 1938 when records were first kept. Biologist Tom Stehn counted 94 birds on the Refuge on 18 November 1985. With two 1½-year olds birds showing up late about 140 km northeast of the Aransas Refuge, the maximum number of Whooping Cranes completing the fall migration from the Wood Buffalo National Park nesting area, stands at 96. Sightings of an additional crane off the Aransas Refuge have not been confirmed. One Whooping Crane has been unaccounted for during recent aerial surveys and, if that bird is dead, the total population wintering at present is 95 birds. That figure exceeds the figure of 86 cranes completing the fall 1985 migration.

The two 1½-year old birds wintering off the Refuge are a male and a female. The male spent his first winter in the same area, after having separated from his parents which later occupied their established winter territory on the Aransas Refuge. The same young male bird (identifiable by colour bands as is the young female) was observed alone last spring in Wood Buffalo National Park, but in September 1985, was seen there in the company of several other colour-banded yearlings. A 28 October 1985 sighting in South Dakota indicates that most of the above birds, including the male and female now off the Aransas Refuge, migrated together.

Canadian Wildlife Service surveys carried out in April and May 1985 over the Whooping Crane breeding range in Wood Buffalo National Park located 28 nests, 27 of these with the usual clutch of two eggs each. The 28th nest was a late nest and contained only a single egg. For the second year in a row, habitat conditions were excellent.

On 22 and 23 May we collected 27 eggs and 23 of the 24 live eggs were placed in nests of Greater Sandhill Cranes in the Grays Lake National Wildlife Refuge in Idaho. Twenty of these eggs hatched. The total population of Whooping Cranes still alive from the transplants since 1975 now numbers about 40 birds. One live egg, two eggs without live embryos and a fourth egg were shipped to the Patuxent Wildlife Research Centre near Laurel, Maryland where one egg hatched.

After removal of the 27 surplus eggs, a single egg remained in each of the 28 nests in Wood Buffalo National Park. Three pairs lost their egg or chick, and four eggs failed to hatch but the other 21 eggs hatched. One of these was the late egg in the single-egg clutch. An aerial survey on 12 June 1985 showed 20 chicks still to be alive. At that time the total population in Wood Buffalo National Park most likely was over 100 birds, an appropriate figure during Parks Canada's Centennial Year.

On 6 August we determined that 16 juveniles were still alive and these birds, including the late chick, were colour-banded two days later. All juveniles except the late bird, were capable of short flights on that date. The young cranes were large and thrifty and obviously had benefitted from the excellent habitat conditions.

We were greatly encouraged when all 16 colour-banded young safely arrived on the winter range in Texas. This is the first time that we have been unable to document migration losses of colour-banded birds during their first fall migration.

Our knowledge of age composition of the Whooping Crane population indicates that in 1986 there will probably not be an increase in the breeding population of more than one pair and there could be a small decrease. With continued good habitat conditions, the 1986 fall flight could contain another 15 juveniles, raising numbers to over 100 birds. With about 40 birds in captivity and similar numbers in the Idaho population, the North American Whooping Crane population is considerably more secure than in 1941 when only 21 birds still existed.

Authors' Address:
Canadian Wildlife Service, Room 230, 4999 - 98 Avenue, Edmonton, Alberta T6B 2X3.

N.W.T. Studies on Gyrfalcon - The Falcon of Royalty

Cathy Stephenson

Gyrfalcons are the largest falcons in the world. The pale phase birds are white, often with black markings. Dark phase birds are grey-brown. Their breeding range covers the open country of northern Quebec and the Northwest Territories north of the treeline, the mountains in most of the Yukon and Alaska, and a small part of northern British Columbia.

Wild Gyrfalcons are highly revered by the falconers of the world. For several hundred years only royalty in England were permitted to hunt with Gyrfalcons. In 1981, an Inuit organization requested permission from the N.W.T. government to harvest Gyrfalcons for export. New legislation was introduced to enable commercial harvest of the falcons. However, little was known about the numbers of Gyrfalcons in the N.W.T. or their distribution.

Surveys were begun in 1982. They were based out of Cambridge Bay, Spence Bay, Pelly Bay, Repulse Bay, Cape Dorset, Lake Harbour and Frobisher Bay.

Although not done in the initial year, ground surveys by snowmobile were conducted in early May to early June of 1983, 1984 and 1985. Cliffs were searched for nests. Most Gyrfalcons nested in stick nests built by Ravens or Golden Eagles. Otherwise, the birds laid eggs on protected ledges with a few sticks or pieces of moss and grass. Information, such as cliff height, nest height and percentage rock overhang was collected at nest sites as well as prey remains to find out what the birds were eating. If the cliff could be climbed the clutch size was also noted. Three to four eggs were laid about mid-May.

During July 1983 and 1984, surveys were flown by helicopter in the same nesting areas. Nest characteristics were recorded, then the helicopter landed and the cliff was climbed. The chicks, which were not yet able to fly, were weighed, measured and banded. In 1982, the survey took place earlier and they were too young to be banded. A numbered aluminum band and a coloured band were placed on the legs of each chick. This allowed individual Gyrfalcons to be identified so that their movements could be studied. It was suspected that a pair of falcons would return to the same nesting territory year after year.

The densities of Gyrfalcons in the areas studied were one pair per 474 km^2 in 1982, one pair per 604 km^2 in 1983 and one pair per 269 km^2 in 1984. The number of young raised per successful pair was 2.4 in 1983 and 2.7 in each of 1982 and 1984.

By examining prey remains left around the nest, it was determined that in the central arctic Rock Ptarmigan is the most important food source early in the breeding season. Later Arctic Ground Squirrels predominated in their diet. The Gyrfalcons also fed on Arctic Hare, small birds and voles or lemmings.

The majority of Gyrfalcons seen were white phase birds. There was a definite trend in colouration from west to east. The proportion of white falcons increased from the central arctic to Baffin Island.

These studies are continuing, but it appears that the Gyrfalcon population in the N.W.T. is stable and producing young at a level similar to other areas within the Gyrfalcon's nesting range.

In 1981, the request for a commercial harvest was for 400 young Gyrfalcons. The government permitted a maximum limit of 50, but none were captured. Since then the quota was lowered to 20 birds. Only two were taken in each of 1982 and 1983 for export to commercial markets. None were taken in 1984. In 1985, the international trade of Gyrfalcons for commercial purposes was banned by the Convention on International Trade in Endangered Species (CITES). The Yukon government also allows the capture of Gyrfalcons, but the birds are almost exclusively used to provide breeding stock for captive breeders in Canada.

Author's Address:
Northwest Territories
Renewable Resources, Box 2668, Yellowknife, N.W.T. X1A 2P9.

NATURALISTS BOOKSHELF

Wildflower: Canada's National Magazine of Wild Flora

35 Bauer Crescent, Unionville, Ontario L3R 4H3.
$15 Subscription and Membership.

Wildflower is published quarterly in cooperation with the Canadian Wildflower Society (CWS) and is the only magazine in Canada devoted exclusively to wild flora.

The CWS is still in its infancy and at the time of writing of the Summer, 1985 edition of the magazine, it was still formulating its bylaws and a code of ethics. Membership then was over 900 from coast to coast and still growing. The CWS appears to be interested in many aspects of Canadian wildflowers which may be applicable to nature lovers and gardeners alike.

Wildflower is a forum for reporting on the business of the Society as well as the activities of other similar groups across the country. Regular items include "Floratorial", news and upcoming events, letters, new titles and book reviews, "Conservation Commentary", and a botanical crossword puzzle (which, I admit, stumped me more than once). The Society also offers a book order service for selected titles. Feature articles included "Plant of the Season: Butterfly Milkweed *(Asclepias tuberosa)";* the interaction of plants and their environment: the role of ants in seed dispersal and of hummingbirds in pollination; botanizing in areas of interest in Ontario and Newfoundland; visits to Botanic Gardens and private wildflower gardens; and, informative "how to" articles on propagation of wild plants by slips, cuttings and transplants. Contributors included amateur naturalists, gardeners, and academics.

Although most articles were from Ontario contributors, the editorial staff hope that the growing membership in other parts of Canada will soon make this a truly national effort. The CWS is, in fact, actively seeking members interested in establishing local or regional chapters.

The paradox of reconciling the spirit of conservation and preservation with the aspirations of gardeners is an important question currently under study by a CWS ethics committee. The code of ethics, when finalized, will be published in *Wildflower* as a guide to all nature lovers. In the meantime, two ways of avoiding potential tragedy by well-meaning gardeners and naturalists are being undertaken by *Wildflower:* education and the

Brown-eyed Susan (Gaillardia aristata) *can be found on prairie grassland, in dry open areas, and along roadsides throughout southern Alberta.*

Photo: J.D. Johnson

opportunity to participate in a seed exchange program.

The magazine, by its numerous, informative articles will surely alert people to the horticultural potential of our wild flora while simultaneously providing information on rare, endangered or sensitive species. None of these should ever be damaged or transplanted except in the most dire of circumstances. As part of this effort lists of plants unsuitable for transplanting will appear as regular installments in the magazine.

The objective of the CWS seed exchange program is to encourage the planting of species native to North America. The coordinator of the exchange acts as a clearing house for information, bringing donors and recipients into contact so that seed may be exchanged directly. The magazine outlines the guidelines for participation in the program and also provides a convenient form for donating material, requesting seeds and supplying feedback on success rates. No list of available seed is supplied, so you are required to do some homework into which species you may desire and their germination and growth requirements. This may be the easiest way to acquire species growing in other climatic regions of the country otherwise unavailable through horticultural or specialty seed sources.

It warms the heart of this botanist to see all species referred to by their common *and* Latin names. All naturalized or weedy species are indicated with an asterisk and footnoted. This practice is essential to a magazine which is attempting to communicate to nature lovers from all of Canada, across which common names may vary considerably.

Wildflower is obviously an economic publication, nothing fancy. Photos are in black and white and unfortunately reproduce poorly on this medium, though many of the articles are illustrated with very fine line drawings. The contents of the articles I found to be informative, interesting and professionally handled. The active participation of academic and professional experts, both as editors and as contributors, adds to the credibility of both the CWS and its publication.

Wildflower has left me with a feeling of hope in the potential for constructive conservation of Canada's flora. Encouraging gardeners and naturalists to appreciate and utilize our flora in the spirit of conservation and preservation can only contribute to awareness and maintainence of our natural heritage.

D. Fabijan

Pioneer Naturalists of The Rocky Mountains and The Selkirks

Beryl Hallworth and Monica Jackson. 1985. Calgary Field Naturalists' Society. 39 pages. Published for Parks Canada's 100th Anniversary. $2 paper.

This little book is a compilation of the natural history observations and travels of a most interesting and hardy collection of men and women who visited and recorded their visits to the great mountain ranges and valleys of the Rockies and the Selkirks.

The authors have researched the background of these early naturalists, presenting them to the reader in the setting of their times and outlining the objectives of their travels. Only by reading for oneself these early journals could these pioneers have been brought more to life. The authors are to be congratulated on their research, choice of detail to include, and careful synopsis of much material which, though of interest to the historian, is extraneous to the total picture. The result is a capsule of interesting people, some well known like Eugene Bourgeau and James Hector of the Palliser Expedition, some less known like the "Butterfly Lady" Mary de la Beach-Nichol.

Whereas the contents of this booklet make fascinating reading for anyone interested in the exploration, natural history and personages who visited and frequently remained to live in the Rockies, the format makes for difficult reading. Besides some obvious typos and missing lines the print is set in small point and in widely spaced columns (lots of white space on the page). The four photographs are in the centre of the booklet. This leads to much flipping of pages to match illustration to text. A line drawing of the great John Macoun, looking very startled, graces the front cover. Much better are the line drawn maps of the earlier travellers' routes. When one considers that these early visitors' journeys took place on foot, in ox carts and on horseback, the accomplishments of these pioneer naturalists can be truly appreciated. That these men and women also climbed mountains and found pathways through forests without many of the aids to travel and observation that we take for granted should be stressed. Naturalists owe a debt of gratitude to these pioneers and in spite of its technical drawbacks a debt of gratitude to the authors for writing this booklet.

Pat Clayton

Recent Publications on the Natural History of Alberta

Compiled by David M. Ealey and Martin K. McNicholl

Naturalists

Bella, L. 1986. Cheap labour in Canada's national parks. Park News 21(4): 3-7.

Halladay, I. 1986. Kay Morck - our first honorary member. Pica 6(2): 28-29.

Hallworth, B. and M. Jackson. 1985. Pioneer naturalists of the Rocky Mountains and the Selkirks. Calgary Field Nat. Soc., Calgary. 39 pp.

Lore, M.S. 1986. Calgary Field Naturalists Society. Pica 6(2): 26-27. -history.

Powell, J. 1986. The Loran L. Goulden Memorial Award. Edmonton Nat. 14(1): 9-11. -M.T. Myres.

Soils

Wilson, J. 1986. Soil conservation strategies. Environment Views 8(6): 17-20.

Water

Goyette, L. 1986. Droughtproofing: small-scale solutions. Environment Views 8(6): 27-31.

Ramage, N. 1986. Droughtproofing: large-scale solutions. Environment Views 8(6): 24-26.

Birds

Bennett, G. 1986. Winter birding in Canada. Birdfinding in Canada 6(2): 9.

Boxall, P.C. 1986. Additional observations of the Barred Owl in Alberta. Blue Jay 44: 41-43.

Clayton, P. 1986. Backyard notes. Edmonton Nat. 14(1): 9. -birds at a Schubert chokecherry.

Collister, D. 1986. A controversial gull at Inglewood Bird Sanctuary. May 6-14, 1984. Alta. Bird Record 4: 2-5.

Collister, D. 1986. Fall 1985 -highlights. Alta. Bird Record 4: 6-41.

Halladay, I. 1986. 1985 Calgary Christmas bird count. Pica 6(2): 23-25.

Harris, W.C. 1985. The nesting season. June 1-July 31, 1985. Prairie provinces region. Amer. Birds 39: 927-928.

Harris, W.C. 1986. The autumn migration. August 1-November 30, 1985. Prairie provinces region. Amer. Birds 40: 130-131.

Hohn, E.O. 1986. Some observations on breeding Broad-winged Hawks. Blue Jay 44: 44-46.

Horch, P. 1986. Unconfirmed sighting of Golden-winged Warbler in Medicine Hat. Alta. Bird Record 4: 1-2.

Houston, C.S. 1986. Mourning Dove numbers explode on the Canadian prairies. Amer. Birds 40: 52-54.

Macintosh, D.J. 1985. Fifth annual Mountain Bluebird trail report. Lethbridge, Alberta. Sialia 7: 103-104.

McKeever, K. 1985. The Owl Rehabilitation Research Foundation 1984 banding report. Ont. Bird Banding 17: 42-45. -including releases in Alta.

Pletz, H. 1986. Piracy of a nest box by a House Sparrow. Edmonton Nat. 14(1): 8.

Schroeder, M.A. 1986. The fall phase of dispersal in juvenile spruce grouse. Can. J. Zool. 64(1): 16-20.

Schroeder, M.A. and D.A. Boag. 1985. Behaviour of spruce grouse broods in the field. Can. J. Zool. 63(11): 2494-2500.

Sidle, J.G., W.H. Koonz, and K. Roney. 1985. Status of the American White Pelican: an update. Amer. Birds 39: 859-864.

Stiles, D. 1986. 1984 Calgary area bluebird trail report. Pica 6(2): 11-18.

Stiles, D. 1986. 1984 bird banding. Pica 6(2): 21-22.

Taylor, P. 1985. Wings along the Winnipeg. The birds of the Pinawa-Lac du Bonnet region, Manitoba. Man. Nat. Soc. Eco. Ser. No. 2 (initially published 1983, reprinted with minor corrections and a supplement, 1985). 223 pp. - includes recovery of Man. -banded Evening Grosbeak at Winterburn, Alta.

Mammals

Clayton, P. 1986. Wolf sighting in Jasper National Park. Edmonton Nat. 14(1): 8-9.

Ferron, J. 1985. Social behaviour of the golden-mantled ground squirrel (*Spermophilus lateralis*). Can. J. Zool. 63(11): 2529-2533.

Stromberg, M.R. and M.S. Boyce. 1986. Systematics and conservation of the swift fox, *Vulpes velox*, in North America. Biol. Conservation 35(2): 97-110.

Parks and Natural Areas

Osborne, C. 1985. Through the seasons on Nose Hill (Part two). Pica 6(1):23-25.

Sheehy, G. 1984. New nature viewpoint. Nature Canada 13(3): 34-35.

Development/Environmental Problems

Adams, S. 1986. Blowing in the wind. Environment Views 8(6): 9-11.

Sangster, H. 1986. Drought and pests. Environment Views 8(6): 14-16.

Slave River Basin Coalition. 1984. To dam or not to dam - a mega-hydro-electric project on the Slave River. Park News 20(2): 3-4.

Sniatynski, G. 1986. No more dustbowls. Environment Views 8(6): 4-8.

Wildlife Management

Bailey, E.A. 1986. Shrinking wildlife habitat. Environment Views 8(6): 21-23.

CAMROSE LUTHERAN COLLEGE
LIBRARY

ALBERTA NATURALIST

Volume 16, Number 3, Fall 1986.

For Reference
OCT 6 1986
Not to be taken from the Library

Photo: Tom Branch

ALBERTA NATURALIST

Volume 16, Number 3, September 1986.

Published quarterly by the Federation of Alberta Naturalists
Box 1472, Edmonton, Alberta T5J 2N5

CONTENTS

Woodland Caribou: Their Status and Distribution in Alberta. *E. Janet Edmonds* . . 73

Herring Gull Migration in the Calgary Area: 1966-1985. *Harold W. Pinel* 79

Norman Bethune Sanson - A Pioneer Alberta Naturalist. *Beryl M. Hallworth* 82

FAN News, Notes and News, Announcements 85

Profiles on Risk Status of Canadian Birds: 3. Loggerhead Shrike. *Martin K. McNicholl* . . 93

Goshawk Attacks Mallards. *Gerrie Wilkie* . . . 95

Further Notes on Bison in Northern Alberta. *Bob Gainer* 96

Former Sightings of Whooping Cranes in the Ft. Vermilion Area. *Bob Gainer* 97

Fish-Catching Mink in Calgary. *Frances Roback and Steve White* 98

Naturalists' Bookshelf

Wildflowers of the Canadian Rockies. *Reviewed by D. Fabijan* 99

The Vascular Plants of South Dakota. *Reviewed by Matt Fairbarns* 101

Birds of Nahanni National Park, N.W.T. *Reviewed by H. Loney Dickson* 101

Recent Publications on the Natural History of Alberta 102

The Alberta Naturalist is published quarterly by the Federation of Alberta Naturalists. Special issues may be published from time to time. Any material printed for the first time in the AN may be reproduced without permission; credit lines will be appreciated. All opinions expressed are those of the authors concerned and, except where stated, do not represent official F.A.N. policy.

ADVICE TO CONTRIBUTORS

Items for publication should be addressed to the Editor at the address below. Deadlines for submission of material for regular issues are: January 1, April 1, July 1, and October 1. All material submitted for publication must be typed, double-spaced, preferably on 8½"x11" paper. Maps, charts, and graphs should be submitted in "camera-ready" form if possible. Photographs accompanying an article should be submitted in the form of black and white prints on glossy paper. (Prints can be made from supplied colour slides or negatives if necessary.) Illustrative material will be returned on request. The author's name and a complete mailing address must be provided with the submission of material. Contributors should be aware that articles of a technical nature and those involving the sightings of rare species, range extensions, out of season records, etc. may be sent out for peer review. A complimentary copy of the issue in which a submission appears will be sent to authors. Information on advertising rates may be obtained from the Editor at the FAN Box No.

DEADLINES for FAN project reports are: *Alberta Christmas Bird Counts,* January 30, Andrew Slater, 22 Hillgrove Dr. S.W., Calgary, AB. T2V 3L6; *May Species Count - Plants,* July 15, J. Derek Johnson, Northern Forestry Centre, 5320 - 122 St., Edmonton, AB. T6H 3S5; *May Species Count - Birds and Mammals,* July 15, Al Wiseley, 202 - 635 - 56 Ave. S.W., Calgary, AB. T2V 0G9. Compiler cooperation is greatly appreciated.

Editor: Derek Johnson,
7109 - 106 St., Edmonton, Alberta T6E 4V5.
Telephones: 436-8231 home, 435-7306 work.
Assistant Editors: Dick Dekker, David M. Ealey

Typesetting: Typeplus Typographers Ltd.
Graphic Design and assembly: Dick Dekker
Printing: Europe Offset Ltd.

The costs of printing the Alberta Naturalist are partially supported by grant funds through the Periodical Publication Assistance program of Alberta Culture. The Federation of Alberta Naturalists gratefully acknowledges this support.

ISSN 0318-5440. Postage paid at Edmonton, Alberta under Second Class Mail Registration No. 3604.

A radio-collared caribou bull and two cows near timberline above the Jackpine River in Willmore Wilderness Park, 30 km southwest of Grande Cache.

Woodland Caribou: Their Status and Distribution in Alberta

E. Janet Edmonds

Most Albertans are not aware that caribou are found in the province. This is not surprising, as most of our caribou inhabit the dense coniferous forests of the boreal and mixed wood zones of northern Alberta. The Mountain Caribou (a migratory variety of Woodland Caribou) also are a rare sight. In summer, they disperse widely over their alpine summer range and in winter they reside in the adjacent forested foothills. An additional reason for the poor likelihood of seeing caribou is that currently they are at very low numbers in the province.

Some general information about Woodland Caribou (*Rangifer tarandus caribou*) will help to set this unique member of the deer family in context, relative to other Alberta Cervidae. Both male and female caribou grow antlers but a cow's are shorter, with fewer points. It is difficult to distinguish young bulls from cows using antler development only. Mature bulls grow a large, sweeping rack which they use during the rut (breeding season) to defend their harem of females from other males. The mature, breeding bulls drop their antlers in December, while young bulls usual-

ly retain their antlers until late winter. Cows drop their antlers at or just after calving. Adult bulls can weigh up to 270 kg (600 lb) but average about 180 kg (400 lb) while females average about 115 kg (250 lb).

Caribou are beautiful animals to see in fall when their antlers have shed their velvet and their summer coats are a rich dark brown on the back, sides, legs and face, and creamy white at the neck. The white neck hair or mane is more pronounced on a mature bull as his neck swells during the rut. Caribou have large feet with crescent-shaped hooves which ease their travel in deep, soft snow or over spongy, moss bogs.

Alpine meadows, snow beds and treeline edge comprise the summer and fall habitat of Mountain Caribou. The picture at left was taken near the headwaters of the Fetherstonaugh Creek, 50 km west of Grande Cache.

During the rut, caribou are found in large groups of mixed age and sex classes. Dominant bulls closely attend groups of cows and defend them from other bulls.

Woodland Caribou breed in early to mid October and usually calve between late May and early June. A cow has a single calf and usually does not breed until 2½ years of age. These 2 factors make caribou productivity low, relative to other members of the deer family. Although Woodland Caribou are gregarious, cows calve alone and are dispersed widely over the summer range. The largest groups are formed during the breeding season and again in late winter when foraging is most restrictive.

Caribou are well known for their ability to use lichens as a major food source. As a result they are most often associated with mature coniferous forest habitat that provides substantial quantities of either terrestrial (ground) or arboreal (tree) lichens. The winter diet usually is comprised of 60 to 70% lichen with dwarf shrubs and grasses comprising the majority of the balance. Caribou are highly tolerant of severe winter climate. Snow depths in Alberta are rarely limiting if the snow is soft. When crusting or compacting makes digging for terrestrial lichens prohibitive, arboreal lichens can provide an adequate diet for most of the winter. Since slow-growing lichens form the bulk of their winter diet, and snow conditions can vary throughout the winter or from year to year, caribou herds require a large winter range. The summer diet is diverse with increased use of willow and forbs, however lichens remain a major component of the summer diet, often comprising 25 to 30%.

Woodland Caribou migrate, but their movements are not as extensive as those of the Barren-ground Caribou (*Rangifer tarandus groenlandicus*). or the Mountain Caribou, that resides in the Grande Cache area, and undertakes long (>80 km) altitudinal and latitudinal movements between their forested foothills winter range and mountainous alpine summer range. In contrast, the woodland variety may carry out long or short seasonal movements (15 km to 80 km) but remain within forested lowland habitat throughout the year.

Caribou numbers and distribution in Alberta have severely declined since the early decades of this century. Prior to the 1930's, caribou were distributed throughout the mixed coniferous and boreal forest zones and in mountainous regions north of Banff National Park. As recently as the mid-1960's, there were an estimated 6000 caribou in the province, but today an estimated 2000 remain and their distribution is patchy and discon-

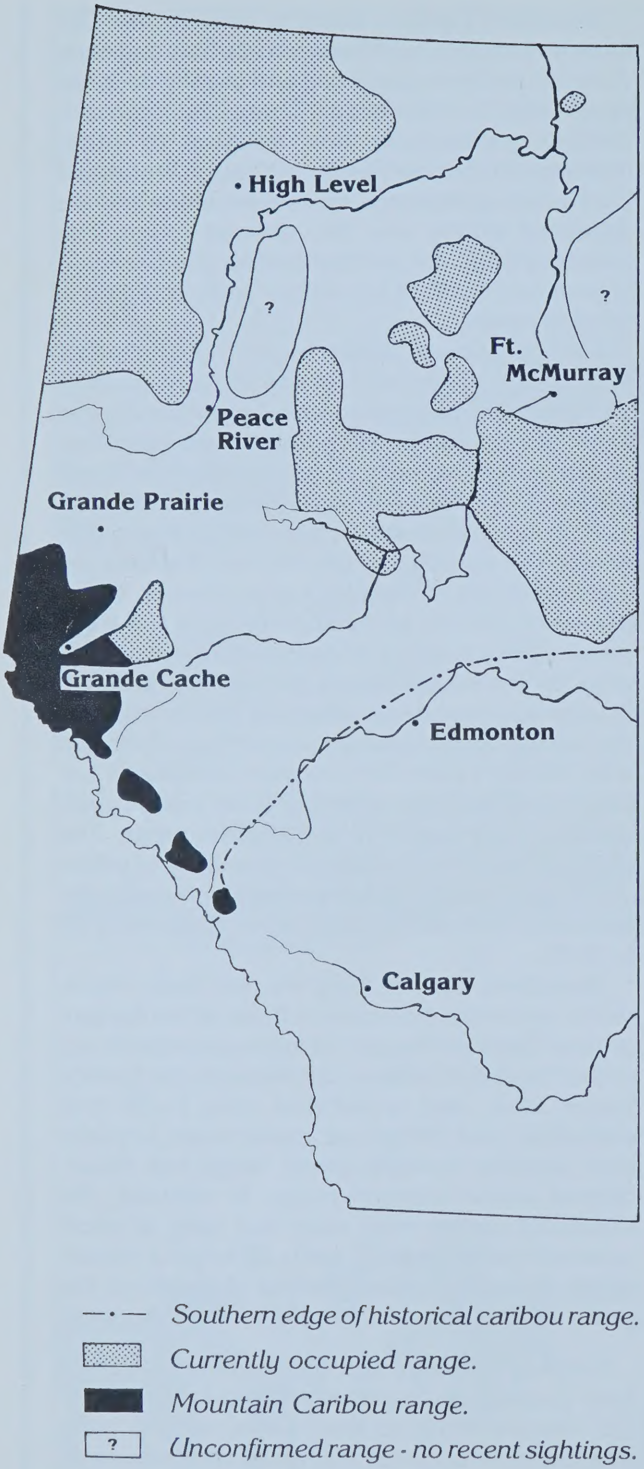

High Level
?
?
Ft. McMurray
Peace River
Grande Prairie
Grande Cache
Edmonton
Calgary
Southern edge of historical caribou range.
Currently occupied range.
Mountain Caribou range.
? Unconfirmed range - no recent sightings.

Figure 1. Historic and current Woodland Caribou range in Alberta.

tinuous (Figure 1). In September 1985, the Fish and Wildlife Policy for the Management of Threatened Wildlife in Alberta designated Woodland Caribou as threatened. A threatened species is defined as "a species that is likely to become endangered if the factors causing its vulnerability do not become reversed". In 1984, COSEWIC (Committee on the Status of Endangered Wildlife in Canada) recognized the western Woodland Caribou as rare.

Why caribou numbers in Alberta have reached such low levels is difficult to determine after the fact. Caribou were of lesser value as a game species, relative to moose, deer and elk, and therefore received little attention or management dollars. However, by the late 1970's, it finally was recognized that the caribou populations in the province had significantly declined and that adequate data to determine harvest levels was lacking. In 1980, caribou hunting was closed. A review of the Annual Reports of the Alberta Fish and Game (Wildlife) Division from 1907 to 1980 and interviews with knowledgeable Forest Officers, Fish and Wildlife personnel, trappers and outfitters, helped to develop an understanding of how the decline came about. Legal and illegal hunting, high levels of predation, and habitat loss or disruption, all took their toll. The Woodland Caribou's association with forested habitat made it very difficult to monitor this decline (i.e. conventional aircraft surveys were of little use).

Today, there are four major management problems that require special consideration and resolution. They are: the alteration and destruction of caribou habitat, the increased access to caribou ranges resulting from industrial roads, the continued loss of caribou to hunting despite closed seasons, and the high levels of wolf predation causing continued decline of caribou herds in west central Alberta.

Resource exploration and development can result in destruction or alteration of important habitat such as winter range or calving areas. Along the southern boundary of caribou range, extensive timber harvests have removed large areas of mature coniferous forest, the primary habitat of Woodland Caribou. Timber harvest continues to remove large areas of presently occupied caribou habitat in west central Alberta. Expansion of coal extraction north of Grande Cache would remove important winter range and possibly disrupt seasonal movements of Mountain Caribou. Oil and gas exploration has less effect on habitat loss but the resulting increased access is a serious

Open muskeg and closed coniferous forest typify Woodland Caribou summer range. Cows with calves are often associated with wet, open habitat. Aerial photo was taken near the Little Smoky River between Grande Cache and Fox Creek, Alberta.

problem. Habitat protection is a key factor in maintaining viable caribou populations. On a positive note, the three major logging companies in west central Alberta have helped to develop timber harvest strategies that will maintain and protect caribou habitat, and have agreed to implement these strategies within their Forest Management Areas.

Resource exploration and extraction have been extensive and intensive throughout Alberta for several decades and are not likely to decrease significantly in the near future. With these activities, access in the form of secondary roads, seasonal roads and cutlines has increased and a greater potential for human/caribou contact results. The number of caribou killed by hunters (intentionally or accidentally), general harassment, and the disturbance or loss of important habitat are likely to increase. During a 4-year study of Woodland Caribou herds in west central Alberta, 30 known cases of man-caused mortality were found. The most common causes were poaching, caribou shot mistakenly for elk, and vehicle and train collisions. A positive benefit of increased access is the greater opportunity for outdoor enthusiasts to see caribou, however this benefit does not offset the many disturbances already described.

Even though recreational hunting of caribou is closed, losses to illegal hunting or mistaken identity (caribou confused for other ungulates) continue. For some herds, like the Mountain Caribou that winter around Grande Cache, these losses are additive to already high natural mortality. Levels of poaching on other caribou herds are unknown. There is no indication that native harvest of caribou is excessive, but levels are unknown.

A particularly difficult problem faces the caribou herds of west central Alberta. A study of those herds was conducted from December 1979 to

April 1983. Two populations of Woodland Caribou resided within the study area: a migratory mountain variety and a more sedentary woodland variety. One of the more important findings of this study was the high level of natural mortality sustained by the herds. The Mountain and Woodland Caribou herds had minimum annual adult mortalities of 19% and 23%, and fall calf percentages of 15% and 19%, respectively. Additional man-caused mortality has further aggravated this situation.

Currently, habitat is not limiting these caribou herds on their winter range. The adult mortality rates measured during the study were primarily wolf related, but reasons for the low calf survival were not identified. Both resident herds are at best declining slowly, and their future survival is in jeopardy. The small woodland herd (<55 caribou) is already reduced to a vulnerable relict herd, and is the most southerly population of lowland Woodland Caribou in Alberta. The next closest known herd of Woodland Caribou is 160 km to the northeast near Lesser Slave Lake. The migratory behaviour of the Mountain Caribou herds (200-250 caribou), using both alpine and forested foothills habitat within a year's cycle, is unique to Alberta's caribou populations. As numbers diminish, these traditional movements may be abandoned and caribou numbers and distribution in Alberta will have shrunk once again.

Tracks and broken branches indicate arboreal lichen feeding by caribou.

Wolf reduction programs are highly controversial; however this option warrants a careful and unemotional assessment. The management of a threatened species requires that all factors currently limiting its growth be addressed. It is also important to understand that it is difficult to justify the economic loss incurred by the logging companies for adopting alternative harvest methods, if the primary limiting factor on the caribou, predation, is being ignored.

What is being done? It is not enough to simply classify Woodland Caribou as threatened. Presently, a Provincial Management Plan for Caribou is under review by the Department of Forestry, Fish and Wildlife Division. This plan presents a set of goals and objectives to be met in order that caribou populations in the province do not continue to decline. Specific strategies are outlined for the protection and maintenance of caribou habitat, for determining the distribution and status of caribou herds in the province, for increasing public awareness about caribou and their status, and for decreasing the high levels of wolf predation sustained by the caribou herds of west central Alberta.

The steady decline of Alberta's Woodland Caribou occurred over several decades with little notice by wildlife enthusiasts or managers. At current low numbers and patchy distribution, their future well-being is vulnerable. However, caribou are a hardy animal and well adapted to the harsh conditions of northern and alpine Alberta. Given adequate protection and a chance to break free of the factors that currently limit their growth, Woodland Caribou can once again be a common wildlife component of the mixed coniferous, boreal and northern alpine habitats.

References

Bergerud, A.T. 1974. Decline of caribou in North America following settlement. J. Wildl. Manage. 38:757-770.

________. 1978. Caribou. *In:* Schmidt, J.L., and D.L. Gilbert, Big Game of North America. Stackpole Press, Harrisburg, Pennsylvania.

Edmonds, E.J. and M. Bloomfield. 1984. A study of woodland caribou (*Rangifer tarandus caribou*) in west central Alberta, 1979-83. Alta. Ener. and Nat. Res., Fish and Wildl. Div. Edmonton, Unpubl. Report. 203p.

Fuller, T.K. and L.B. Keith. 1981. Woodland caribou population dynamics in northeastern Alberta. J. Wildl. Manage. 45(1): 197-213.

Miller, F.L. 1982. Caribou (*Rangifer tarandus*). *In:* Chapman, J. and G.A. Feldhamer. (Ed.) Wild Mammals of North America: Biology, Management and Economics. The John Hopkins University Press, Baltimore. 1147p.

Author's Address:
Alberta Fish and Wildlife, 7th floor, 6909-116 St., Edmonton, Alberta T6H 4P2.

Photos: Alberta Fish and Wildlife Division

Herring Gull Migration in the Calgary Area, 1966-1985

Harold W. Pinel

The Herring Gull is a spring and fall migrant through the Calgary area. There are a few summer sightings, but it is known to nest only as far south as Namur Lake and Lower Therien Lake in Alberta (Salt and Salt 1976).

Over the past two decades, the author felt that this species was becoming much more prevalent in the Calgary area. With this in mind, an analysis of the Calgary Field Naturalists' Society observations was done to determine the migration dates, the peak occurrences during spring and fall migration, and to compare the numbers seen during the last two decades. In some cases, different numbers of birds were reported at the same place on the same day. This situation was mainly the result of the time of day that the observer was viewing the gulls. Numbers seem to increase in the late afternoon especially during the spring migratory period. In all cases, only the highest count for this day at a single location was counted.

Table 1 gives the extreme migration dates for each year. The highest numbers of Herring Gulls seen in a single observation are summarized by 5-year periods. For some years, especially in the 1960's, there were only a few observations, so data are lacking in certain categories. Note the steady increase in peak numbers in a single observation from 30 in the 1966-1970 period to 543 in the 1981-1985 period. The earliest spring migration date for Herring Gulls in the Calgary area is March 19, 1984; the latest fall migration date is December 6, 1981.

Table 2 illustrates the dramatic influx of migrating Herring Gulls into the Calgary area during April. A breakdown of the April observations in Figure 1 shows the third week of April to be the peak period for Herring Gulls. The number of birds observed during the fall is much less than in the spring (Table 2), but fall migration is spread out

Table 1. Summary of migration data for Herring Gulls, 1966-1985.

	First Spring Migrant	Last Spring Migrant	First Fall Migrant	Last Fall Migrant	5-year Peak Number Observed
1966	March 28	—	—	—	
1967	—	—	—	—	30 - April 17/70
1968	April 4	—	Sept. 25	—	Calgary, D.V. Weseloh
1969	—	—	—	—	
1970	March 20	—	Sept. 18	Oct. 15	
1971	April 1	April 27	Sept. 15	Oct. 24	
1972	March 20	June 27	Sept. 9	Oct. 12	63 - April 20/72
1973	March 23	April 30	—	Oct. 28	Janet, D.V. Weseloh
1974	April 13	April 21	—	—	
1975	April 10	April 27	Oct. 31	Nov. 19	
1976	April 3	April 27	Aug. 29	Nov. 21	
1977	March 23	April 23	Aug. 8	Nov. 12	200+ - April 21/79
1978	March 24	May 6	Sept. 9	Nov. 5	Calgary, A. Slater
1979	April 5	April 22	—	Oct. 28	
1980	April 3	—	Oct. 14	Nov. 19	
1981	March 22	June 11	Aug. 9	Dec. 6	
1982	March 28	May 30	July 31	Nov. 14	543 - April 22/85
1983	March 30	June 6	Aug. 15	Nov. 19	Calgary, W. Smith
1984	March 19	May 23	Aug. 10	Nov. 18	
1985	March 28	May 25	Aug. 7	Nov. 10	

over a longer time period. On a monthly basis, October is the major fall migration time for this species, but in a weekly analysis as shown in Figure 2, the majority of the sightings occur in the last week of October and the first week in November.

In a comparison of peak migration times in the Calgary area with Weseloh (1972), there is agreement with the spring migration peak in the third week in April. The fall peak migration time has shifted through the years from the first week in September as depicted by Weseloh's data to the last week in October as illustrated in this paper.

Table 2 gives a monthly comparison of Herring Gull numbers over the past two decades. The numbers of birds are up dramatically in the last decade, 1976-1985, as compared to the previous decade, 1966-1975. Other factors to account for this dramatic increase were considered, such as number of observers, quality of observers, or number of observations reported. Table 3 gives data on the number of observers, the number of reports, the number of birds, the number of birds reported per record submitted, and the number of birds reported per observer for the last two decades. The numbers of birds observed do not represent numbers of different individual birds. These figures are undoubtedly high because an individual bird may have been seen more than once in the Calgary area. Still, major trends between the two decades can be seen. The more recent decade, 1976-1985, had more observers, more observation reports, more birds per observation report and more birds seen per observer. The highest numbers observation for each 5-year period as illustrated in Table 1 confirm the trend that the Herring Gull is becoming a more common migrant in the Calgary area.

Table 2. Monthly comparison of Herring Gull numbers over the past two decades.

Month	No. Birds 1966-1975	No. Birds 1976-1985	Total Birds 1966-1985
March	15	143	158
April	413	5435	5848
May	43	1091	1134
June	6	9	15
July	3	1	4
August	8	74	82
September	29	47	76
October	13	302	315
November	3	197	200
December	0	2	2
TOTALS	533	7301	7834

There are a few other factors to support this trend. The small core of birdwatchers that have reported observations through both decades recorded more birds in the last decade. Also, most of the detailed work on gulls in the Calgary area in the last two decades happened in the earlier decade, specifically in the early 1970's when D. Vaughn Weseloh was studying them. Even with keen observers looking specifically at gulls in the earlier decade, fewer Herring Gulls were recorded.

The localities where the Herring Gulls are most frequently reported in the Calgary area have remained constant over the years: the Inglewood Bird Sanctuary, sanitary landfill sites, Glenmore Reservoir, Carburn Park and Carseland Dam.

Sincere appreciation is extended to all members of the Calgary Field Naturalists' Society who have contributed observations of Herring Gulls to the Society files.

Literature Cited

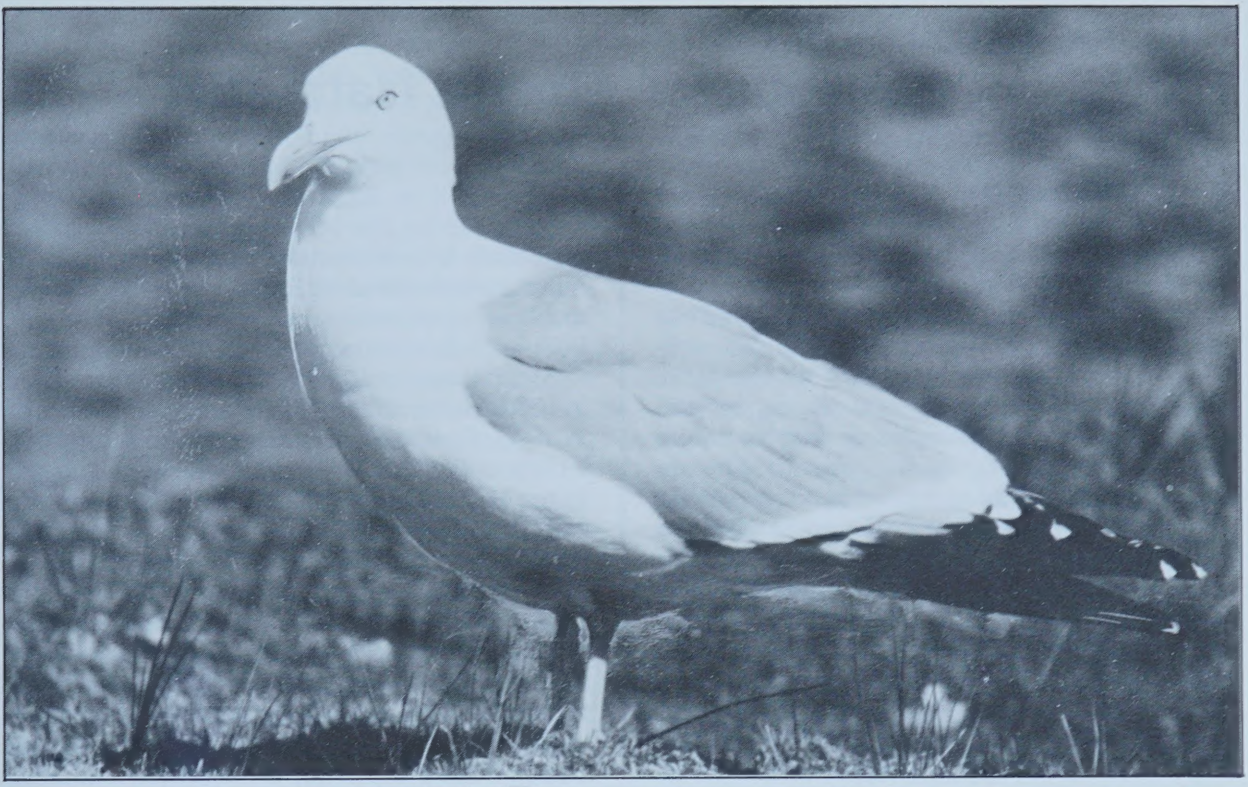
Salt, W.R. and J.R. Salt. 1976. The birds of Alberta. Hurtig Publ., Edmonton. 498 pp.

Weseloh, D.V. 1972. Migration of the Herring Gull in the Calgary area, 1965-1971. Calgary Field Naturalist 3(9): 122-123.

Author's Address:
1017-19 Avenue N.W., Calgary, Alberta T2M 0Z8.

Table 3. Comparison of Herring Gull numbers in relation to numbers of obervers and reports.

	No. of Birds Observed	No. of Observers	No. of Observation Reports	Average No. Birds/ Report	Average No. Birds/ Observer
1966-1977	533	31	109	4.9	17.2
1976-1985	7301	60	501	14.6	121.7



Adult Herring Gulls can be identified by large size, pink legs, and light-coloured eyes. Photo: Edgar T. Jones

Figure 1. Total number of Herring Gulls on a weekly basis, April and May, 1966-1985.

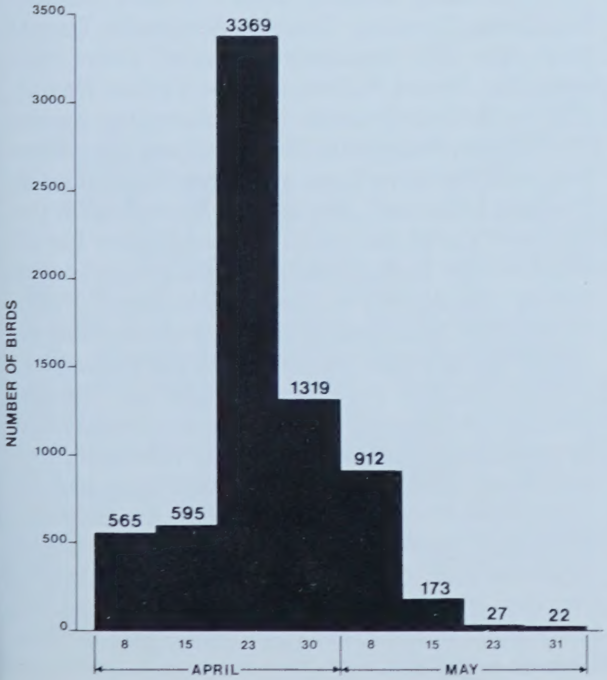
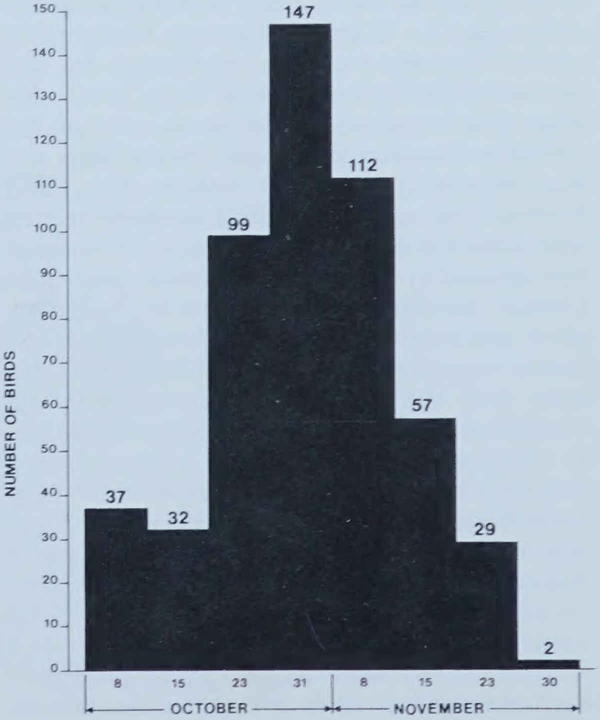


Figure 2. Total number of Herring Gulls on a weekly basis, October and November, 1966-1985.



Norman Bethune Sanson - A Pioneer Alberta Naturalist

Beryl M. Hallworth

Norman Sanson was born in 1862 in Toronto, the son of an Anglican churchman. Norman was educated in the public schools of Toronto, and was later sent to Upper Canada College, still well-known today as a teaching centre with high standards. Norman developed a love of reading, and was interested in poetry; he very much enjoyed nature rambles and outdoor pursuits. This love of nature proved to be one of the dominant factors in his life.

When the Riel Rebellion broke out in 1885, he volunteered for service, and joined the Queen's Own Rifles. The Canadian Pacific Railway had been built across the prairies a few years before. It proved a great asset for moving troops quickly. When the Riel Rebellion had been quelled, Sanson stayed with his regiment for a while, and then, in 1892, he travelled west to Calgary to stay with his brother, who had just been appointed Medical Officer to the North West Mounted Police, stationed at Fort Calgary since 1875.

In 1892, Norman Sanson arrived in Banff. He was now a young man of thirty, and soon found employment as steward and bookkeeper at the well-known Dr. Brett's Sanitorium Hotel, which utilized the water from the Hot Springs. He also worked in Banff's first General Store, and in his spare time, he helped Mr. MacKenzie, who was the official meteorologist for Banff. As the place was now becoming known to tourists (the Banff Springs Hotel was built in 1888), weather forecasts were always in demand. When the Banff Museum was opened in 1895, Mr. MacKenzie was made Curator, and Sanson helped him by collecting plant specimens. In 1896, MacKenzie died, and Sanson was appointed Curator in his place. He also took over the duties of meteorologist. The Museum was opposite the Hospital, on the corner of Mountain Drive and Spray Avenue. It had originally been intended as a house for the Park Superintendent, and when partially constructed, was moved to the chosen site. In 1903, a new Museum was built, close to the Bow River Bridge, on what is now Banff Avenue. This was a much larger building, with plenty of room to display plant specimens, and other natural history specimens such as mammals, birds, and butterflies. Sanson also made a collection of rocks and fossils. The Museum had a Reading Room with a Library, and displayed pamphlets about "Rocky Mountain Park" - the original name for Banff National park.

Sanson was Curator for 35 years until he retired in 1931, but he continued collecting until he died in 1949. Over the years he amassed a huge collection of 6,000 specimens. These were donated to the Herbarium of the University of Calgary in 1971; in 1978 they were sorted, annotated and catalogued, placed in distinctive folders, and incorporated into the main Herbarium.

Norman Sanson was an ideal choice for the Curator of the Banff Museum - he was very interested in all branches of natural history, and enjoyed collecting plants, mammals, fossils and butterflies. He loved the mountain scenery - he was always happy exploring the Rocky Mountains, walking on Indian trails, and finding new species of alpine flora.

Sanson roamed over great stretches of country - over the present Banff National Park, also Jasper, Yoho and Kootenay National Parks. He explored the mountains around Banff - Mount Rundle, Bourgeau, Norquay, Cascade Mountain, Tunnel Mountain, the mountains around Lake Minnewanka, Mount Aylmer and the Palliser Range, and Mount Inglesmaldie. He explored the passes of the Rocky Mountains; Simpson Pass, Vermillion Pass and Wastache Pass, and spent happy days at Moraine Lake and Lake Louise. He walked in the Tonquin Valley and around Mount Edith Cavell and Calumet Peak. He went south, and collected plants in Waterton Lakes National Park. Altogether, he collected at 169 sites in Alberta.

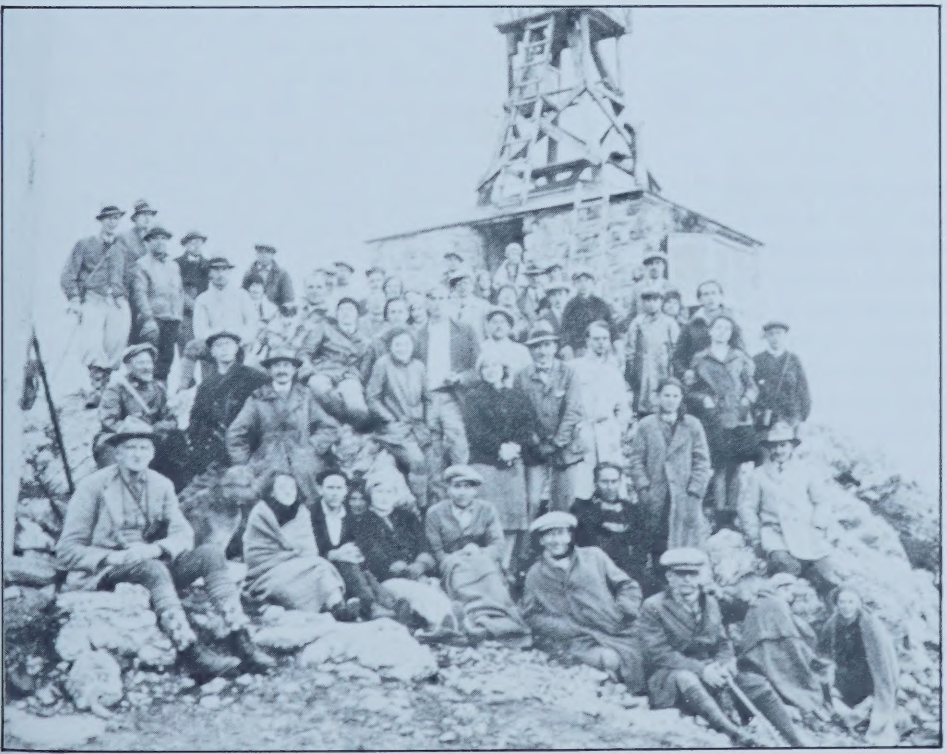
British Columbia also proved a "happy hunting ground" for this wide-ranging botanist. The old "Big Bend Highway," with an infamous reputation for motorists, provided 2 sites, at Kinbasket Lake and Bush River. Both these sites disappeared under water when Mica Dam was built. He explored Vancouver Island, Mount Arrowsmith, Cameron Lake and Forbidden Plateau. He also travelled in the dry interior of British Columbia around Kamloops, in the Okanagan Valley and in New Denver and Kaslo.

Sanson joined the Alpine Club of Canada in 1913, and he enjoyed the Annual Summer Camps - the main activity of the Club. These camps were always held in the mountains, and took him to places such as the Lake of the Hanging Glaciers that he probably would not have reached on his own. Other camps were held at Rogers Pass, Paradise Valley and Lake O'Hara. All these camps provided splendid opportunities for collecting plants. He was a founding member of the Skyline Hikers in 1933 and their President for three years. He was 70 years old then, but still full of energy.

Eleanor Luxton, in her book "Banff - Canada's First National Park", describes Sanson as "tall, lean and always wore English tweeds". She continues, "he read much, and could quote poetry freely - he could be taciturn, but he could also be very droll."

Although a self-taught student of Natural History, he became an authority on Rocky Mountain plants. His evenings were spent sorting and pressing his specimens, and later identifying them, so that they could be displayed in the Museum with their correct Latin names - he usually added the common names as well. He also built up a collection of over 1,000 butterflies and a larger collection of moths. The butterflies have been catalogued by Bird (1976), but the moth collection has not yet been catalogued. Sanson was friendly with Mr. F.H. Wolley-Dod, the most important of the pioneer lepidopterists of Alberta. Wolley-Dod lived on his ranch near Midnapore, then a village south of Calgary. Sanson corresponded with him for years, sending him butterfly and moth specimens for identification or verification, and in 1915 he went to Midnapore to visit him. In 1910, Wolley-Dod named a moth in Sanson's honour, *Autographa sansoni*.

The Federal Government decided that an Observatory should be built in the Rocky Mountains. The site eventually chosen was on the summit of Sulphur Mountain, and this was largely due to the efforts of Norman and his friend, George Paris. As the 2653 m summit was inaccessible by road, a trail had to be built, so that all the materials needed (except for the stone) could be brought up by pack-horses. The trail was 6 km long; it was begun in 1902 and finished in 1903. Then pack-horses, laden with lime and sand, were taken up the trail every day for 6 weeks. Stone, at the site, was quarried and chipped, and in 1903 the building was completed and fitted with barometer, barograph, rain gauge, thermometers and other instruments, all carried up on pack-horses. These instruments had to be checked every 2 weeks, and this entailed a long climb up the mountain - very pleasant



Norman Sanson, front row left. July 1, 1931. The 1000th ascent of Sulphur Mountain.

in the summer, but hazardous in winter. Sanson was so fond of walking that he often went up every week, and collected plant specimens on the way - many of his labels read, "Sulphur Mountain, beside the trail". From 1903, until he retired, he made regular visits to the Observatory, and on July 31, 1931, he made his one thousandth climb. His friends from the Rotary Club at Banff decided to celebrate the occasion with a "Sunrise Breakfast" at the summit, and the Banff Springs Hotel personnel provided the welcome food and blankets. Some rode up on ponies, but many walked the trail. This event was a great success, and when breakfast was over, the guest of honour was presented with a large bronze medal, conferring on him the "Freedom of Sulphur Mountain". This permitted him to catch all wildlife on the mountain "*provided he used his bare hands*".

An unexpected honour awaited him on November 19, 1948, when he was 86, when the Geographic Board of Canada named the highest peak on Sulphur Mountain "Sanson Peak".

Sanson had many visitors to his Museum - he was always ready to talk to them, and to identify the flowers they brought him. In 1931, the King and Queen of Siam (Thailand) came to see him, and he promptly led them up the trail to the summit of Sulphur Mountain - an adventurous and energetic royal pair! In 1939, King George VI and Queen Elizabeth (now the Queen Mother) travelled across Canada, and stayed in Banff. Sanson was a well-known character by this time. King George had heard all about his trips up Sulphur Mountain, and asked to meet him.

In 1934 Sanson planned a trip to Dawson City, scene of the Klondike Gold Rush in 1898 on the Yukon River, and he went by river steamer down the Yukon River to Whitehorse - collecting all the way. He journeyed to Atlin, a former gold-mining centre on Lake Atlin, in the extreme northwest corner of British Columbia, then back to Whitehorse, and went on the White Pass Railway, now closed. He ended his journey at Skagway, in Alaska. As he collected plants wherever he went, and labelled them with the date, and place of collection, it has been possible to make a map of his entire journey.

His next trip was a more adventurous one; in 1938 he joined the Hudson Bay Company's boat, the "Nascopi", at Churchill, on Hudson Bay, and explored the Eastern Arctic. Sanson visited Chesterfield Inlet on Hudson Bay, Baker Lake, Wolstenholme on the Ungava Peninsula, and five settlements on Baffin Island: Lake Harbour, Pangnirtung, Clyde, Arctic Bay and Pond Inlet. He also visited Fort Ross on Somerset Island. The "Nascopi" called at Craig Harbour on Ellesmere Island, (the most northerly Arctic Island), and further south, in Labrador, it called at Port Burwell and Hebron. Sanson managed to reach Thule, in Greenland, and brought back some Arctic Poppies. As he collected wherever the ship stopped, it has been possible again to make a map showing his travels.

In 1935, a year after his trip to the Yukon, Sanson sailed to England, to attend a reunion in London of the veterans who fought in the Riel Rebellion, fifty years before. He did not return to Banff until 1936. While in England and Scotland, he toured the countryside on foot, and wherever he went he continued to collect plants for the Banff Herbarium - he brought back at least 65 plants.

Back in Banff, he continued to explore the Rocky Mountains and build up the Herbarium. He corresponded with many botanists, often sending them his specimens for correct determination or verification. In 1937, he corresponded with C. Skottsborg, a botanist associated with the Herbarium at the University of Gotesborg in Sweden. He exchanged specimens with him, thus adding 148 excellent specimens of Scandinavian flora to his Herbarium.

Sanson never married. He had several good friends in Banff, and was respected by all. He died on May 30, 1949, a sad loss to the Banff community, and was buried in the Banff cemetery.

In 1985, there was a year-long programme in Banff to mark the Centennial Year of the National Parks of Canada. As part of these celebrations, there was a Sanson Solstice Hike up Sulphur Mountain on June 21 - an interesting way to perpetuate the memory of a distinguished Banff citizen - Norman Bethune Sanson.

References

Bird, C.D. 1976. Rhopalocera in the N.B. Sanson collection. Journal of the Lepidopterists' Society 30(3): 201-206.

Bird, C.D. and A.M. Harper. 1980. F.H. Wolley-Dod, Alberta's leading pioneer Lepidopterist. Alta. Nat. 10(2): 49-55.

Jones, Lawrence F. and George Lonn. 1969. Pathfinders of the North. Pitt Publishing Co., Toronto.

Luxton, Eleanor. 1975. Banff. Canada's First National Park. Summerthought, Banff.

Robinson, Bart. 1973. Banff Springs, the Story of a Hotel. Summerthought, Banff.

Thomson, Theresa. 1974. One Thousand Climbs to Breakfast. Alberta Historical Review. Winter, 1974.

Author's Address:
3715 Underhill Place N.W., Calgary, Alberta T2N 4G3.

F.A.N. NEWS

The 1987 **Annual General Meeting** will be held in Calgary on January 24 and 25. The theme for our program is Urban Natural Areas and the Role of Nature Centres. We expect it to be an interesting and productive meeting, and would encourage all members to attend. The general public will be invited to take part; we have kept the registration fee down so that cost will not deter attendance. For further details see insert accompanying this issue. Inquiries can be made to the F.A.N. office at 422-9158.

Tourism and the Environment - Conflict or Harmony?

The Canadian Society of Environmental Biologists, Alberta Chapter, sponsored a two-day symposium on Tourism and the Environment on March 18 and 19, 1986, at the Calgary Convention Centre. This included a total of 15 speakers from the government, the tourism industry, and academia. A bonus was a luncheon speaker, Mark Lowey, Environmental Reporter for the Calgary Herald, and a banquet presentation on the Olympics by a representative from O.C.O. '88.

Speakers from Travel Alberta, *Don Syrnyk* and *Jan Bloomfield,* gave us an idea of what tourism means to Alberta and some of the government initiatives in promoting tourism. Sample - Tourists in Alberta come from: Alberta 48%, other parts of Canada 37%, U.S.A. 11%, and Foreign Countries 4%. *Peter Boxall* of the Fish and Wildlife Division covered fishing and hunting in Alberta. Sample - World class trout sport fishing along the Bow River southeast of Calgary supported 10 local guides, with 550 non-Albertan anglers per year. Duck and goose licenses are the most popular with about 3000 sold in 1984. Moose licenses are next at 1026. Hunting has been in a decline since 1983, probably due to a changing attitude towards hunting.

Two speakers from the tourism industry gave their views: *Ian Mackie* who runs boat tours out of Lake Minnewanka, and *Brent Ritchie,* president of the Tourism Industry Association of Alberta. Samples - Tourism is the number 3 industry in Alberta behind oil and agriculture. Prediction - by the year 2000 it will be number 1. Niagara Falls is Canada's number 1 tourist destination, Banff and Jasper are number 2. Ian Mackie stressed the need for quality class tourist facilities, whether campsites or hotels. He also feels that park wardens should be helpers rather than enforcers.

Brent Ritchie gave some premises and principles regarding tourism and the environment. A partial list follows:

- Environmental policy and Tourism policy must be a partnership.
- Economic forces will win out.
- Carefully planned tourism is preferable to something else.
- We must always err on the side of preservation.
- Only the mountains are of tourism significance.

Two park managers, *Bruce Leeson* of Banff and *Bernie Lieff* of Waterton gave talks from their perspective. Bruce Leeson reminded us that the original focus of tourism was epitomized by the large hotels built by the railroad to attract visitors. Today they still come for the purpose of viewing the landscape, but if asked for a highlight it is usually viewing large wildlife. Banff and Jasper townsites will not be enlarged. They can increase 30% in population without highrise housing.

Bernie Lieff told us that management of natural areas must be supported by taxes. People are willing to support them even if they don't get there. Example - South Moresby. Preservation is more important when park values are at risk. Example - Lake Louise village was turned down. Waterton is now developing a parks user survey. It is a Biosphere Reserve with over half of Alberta's flora found there.

Four professors addressed the gathering, John Marsh from Trent University, Richard Butler from the University of Western Ontario, Jim Butler from the University of Alberta, and Stephen Herrero from the University of Calgary.

John Marsh spoke on wilderness tourism. He found that only 14% of visitors to the Mountain parks went on trails, and 3.5% backpacked.

Jim Butler talked about several spots around the world where tourists are impacting on the environment. Point Pelee - evaluations are underway to find how much impact birdwatchers have off the trails. Kenya - tourist vans were harassing lions and cheetahs, but drivers are more careful now. Banff - we have stopped feeding garbage to the bears.

Richard Butler talked on the impacts of tourism which vary according to social, environmental and economic factors. Tourism is uncontrolled, (eg. proposed waterslide just outside of Waterton Park), even though it often depends on the environment. Tourism is dynamic. Mountains used to be a barrier, now they are a tourist destination. Complaints aren't new. Banff trails were considered crowded in 1900. All impacts are not due to tourism, eg. trucks in Banff Park. Therefore, Environmental Impact Assessments must account for peripheral items. Can tourism and the environment be symbiotic? He gave an example of ospreys in the U.K. Extirpated in 1910, they were reintroduced in the 1950's. This first success is a national landmark for tourism run by the Society for the Protection of Birds.

Stephen Herrero took us through three famous world tourist sites where viewing wildlife is the key element: East Africa with millions of tourists per year; Galapagos with about 20,000 per year; Alaskan Grizzly Bear Reserves which only allow a few thousand tourists per year.

He dealt with accommodation, protection and problems on these reserves. He indicated "protection exists because of tourists."

Walter Moser talked about Obergurgl, an Austrian village where he helped coordinate an area allocation plan. He had grown up with tourism in his native Austria and brought a different perspective to the talks. The area allocation plan had input from the local villagers, the tourist industry, and scientists who counted the flora and fauna. Some features:

- You can't stop development, but you must manage it, and think of the next generation. Manage the offering, not the demand.
- The mountain areas are now protected landscape, with only the valleys available for development, and that is recognized as being limited.

Archie Landals, now with the Environmental Council of Alberta, has had much experience in parks planning in Alberta. The title of his talk was "Those bloody tourists are ruining our parks", a quote from his aunt who lives in Jasper.

Much of his talk dealt with techniques to minimize the impact of tourism:

- More parks in Canada, but chosen where conflicts will be minimal.
- Park zoning and restrictions, eg. Plateau Mountain ice cave gate, Johnson's Canyon boardwalks, Lake O'Hara buses, Dinosaur Park guided tours.
- Expand tourist opportunities, eg. tour buses for sightseeing, not just rest-stops.

His summation - "Our lack of will is the problem. We know most of the answers."

Finally, there were two speakers who dealt with planned parks: *Gavin More* on Kananaskis Country, and *Peter Murphy* of the University of Victoria on Disneyworld. Gavin More presented an audiovisual on Kananaskis Country which quickly ran through the opportunities there. Before 1977, the area was going downhill. Now it is highly developed with good roads, parking lots, facilities for the handicapped, upgraded toilets and trucked garbage.

The Disneyworld presentation appeared as if it was going to be a presentation on a man-made tourist development. However, Peter Murphy pointed out that the first element in building Disneyworld was control of the environment. The first item was the installation of self-regulating dams on the local waterways to ensure the water table remains high, and to retain a large natural area adjacent to the park. The public is not allowed in this natural area.

The second item was the building of pipelines underground for the transport of garbage to one local incinerator, and tertiary treatment plants for sewage. Another item in the success of Disneyworld is staff motivation and training, where even street sweepers are ready to answer questions from the public.

Our luncheon speaker, *Mark Lowey* of the Calgary Herald, dealt with "Public Land and Tourism, are they compatible?"

He quoted columnist Roy Farran, who has written 5 columns on tourism and is in favor of "reasonable development." But no one defines "reasonable". Who defines it? How? He also quoted provincial policy makers such as Les Cook and Don Sparrow who look for "opportunity orientation" in the Eastern Slopes.

Another quote was from Environment Minister Tom McMillan who admits "bias to tourism when Tourism Minister and bias to the environment when Environment Minister."

Finally, he quoted from some environmentalists, such as: Mike McIvor, who feels development should be in Canmore, Radium and Golden rather than in the parks; Vivian Pharis who is concerned about excessive grazing on the eastern slopes; and Martha Kostuch, who would like to retain the wilderness experience.

Finally our banquet speaker, *Ron Sandrin-Litt*, gave an update on what is happening with Olympic construction; 20,000 visitors are expected.

Don Stiles.

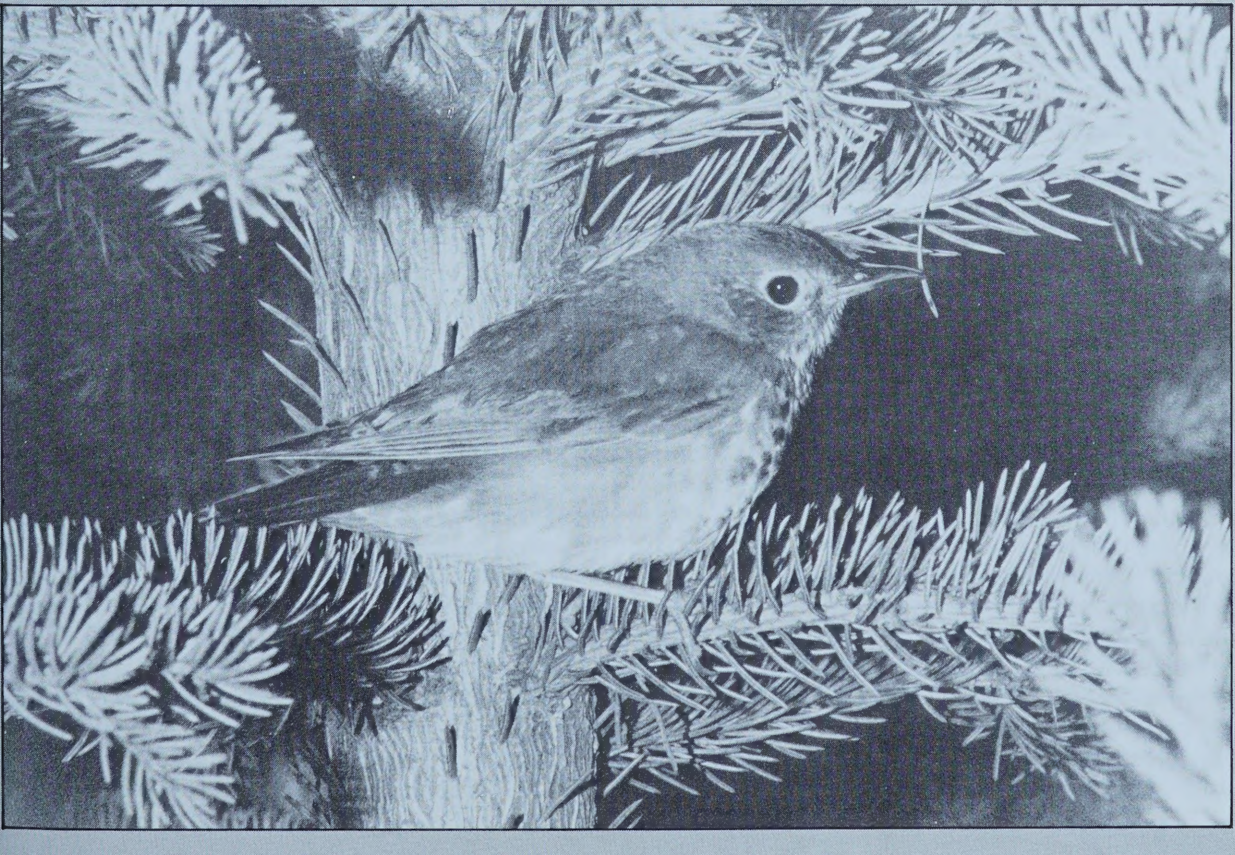
From the Editor

I did not expect to be deluged with responses to the questionnaire published in the Spring issue of the *A.N.* - and I was not. I thank the ten of you who took the time to respond. For general interest's sake I will summarize what few responses I did get to the questionnaire. Eight of the ten respondents felt that the *A.N.* was the most appropriate medium for publication of both the Christmas Bird Count and May Species Count reports (the other two favored the *A.B.R.*). Responses to the third question had eight of the ten respondents favoring the *A.N.* as the preferred medium for publishing notes on rare bird sightings, range extensions, out-of-season records, etc. (the other two favored the *A.B.R.*). In this case, I think whichever journal receives an article of this nature is the one that should consider publishing it. The fourth question elicited the most mixed response. Five of the ten respondents favored publishing Special Project reports in their entirety in the *A.N.*, four felt that a summary in the *A.N.* with the tables in the *A.B.R.* would be more appropriate, and one felt a summary should be included in the *A.B.R.* in addition to the detailed report in the *A.N.* From some of the comments included with the responses, it is clear that a number of readers would be just as happy if the detailed tabular listing of species was not included with the C.B.C. and May Species Count reports published in the *A.N.* This point is being considered further by the editors. However, for the time being, we will continue to publish the results of the C.B.C. and May Species Count in their entirety in the *A.N.* as we have over the past two years.

If this issue of the *A.N.* seems a bit thin, blame the Editor's absence from town throughout most of June, July and August for it. Summer field work makes it a challenge to try and put together a complete Fall issue and get it out on time. My apologies.

J. Derek Johnson

Dr. Jim R. Salt has supplied many excellent photographs to the A.N. (Can anyone identify this songbird?) Jim recently moved to B.C. His current address is: 464 Nelson Street, Victoria V9A 6P4.



NOTES AND NEWS

Letter to the Editor

In reading **Report on Federal-Provincial Wildlife Conference, 1985** (Alberta Naturalist 16(2): 49-50), I was left with an uncomfortable feeling.

Statements such as "...animal rights groups were convincing the press, public and politicians that modern wildlife management is not needed", and "...resource managers must be forced to follow the dictates of the strongest lobby instead of the science-based teachings of their own profession", are revealing and compel me to read between the lines and offer comments.

It seems a rift is growing between various "conservation" groups. Lack of communication and scarcity of required data are only partly to blame. A prime source of divergence between groups comes in the definition of conservation. It is clear there are various brands of conservation - some of them scarcely concealing the rustling of currency at the till. Implicit in conservation decisions is the notion of desirable and undesirable species.

"Modern wildlife management" as practiced by governments is heavily biased toward ungulates and trout. Citizen conservation groups such as the World Wildlife Fund, the Nature Conservancy, and others have fortunately avoided this bias. Well over 99.5% of the species in a given ecosystem are non-game species, and they are left to fend for themselves willy-nilly. If "modern wildlife management" resorts to the poisoning of perfectly stable lake communities, the blocking of its inlet and outlet streams, for the introduction of trout; or to the elimination of wolves in order to maintain artificially high ungulate populations - for the benefit of hunters; to the decrease in native grouse in favour of introduced pheasant; if "modern wildlife management" is the maintenance of a handful of species without regard to the health of the ecosystem - and this simply to benefit a handful of the human population, then "modern wildlife management" should be unacceptable to any informed member of society. As one Alberta wildlife manager put it, "we are in the market of providing recreational opportunities". It would be dishonest to name these activities conservation.

It is purely and simply human arrogance to assume that wildlife has no inherent rights! All species have as much a right to this earth as we. What are rattlesnakes good for? They are good to be snakes! (Incidentally, it has been estimated that rattlesnakes save farmers about $60./ha/yr in grain that would be consumed by ground squirrels.)

Clearly it is not to the benefit of society and of nature that a rift should develop between groups such as wildlife managers and animal rights groups. We are all members of the same choir - and as the song goes, " some sing low, and some sing higher, some sing out loud on the telephone wire, and some just clasp their hands and paws and anything they got...".

Conservationists would do well to recall the teachings of the founder of modern wildlife management, Aldo Leopold.

"Quit thinking about decent land-use as solely an economic problem. Examine each question in terms of what is ethically and esthetically right, as well as what is economically expedient. A thing is right when it tends to preserve the integrity, stability, and beauty of the biotic community. It is wrong when it tends otherwise ."

Kevin Timoney

Celebration, Dedication and Solidarity Mark Spirit of Moresby Caravan

An overwhelming spirit of celebration and solidarity linked thousands of Canadians who rallied along the route of the Save South Moresby Caravan during ten days in March. What began as a local grassroots movement on the Queen Charlotte Islands in 1974 is now a national issue: the preservation of South Moresby. The archipelago has been the centre of controversy since timber companies began logging the unique region in the early 70's.

The caravaners, who were travelling by train, were greeted by festive crowds wherever they stopped. In Halifax, more than 100 people gathered to the thunderous drumming and chanting of the MicMac Spiritual Council. In Vancouver, 2000 people jammed the CN Rail Station to welcome travellers. An old man in the crowd commented, "I haven't seen anything like this since VE Day."

No less remarkable was the generosity and dedication of individuals. An elderly woman in Montreal pressed a $1000 cheque into the hand of a Caravan organizer with the words, "Thank you, this gives me hope." In Fredericton Junction, New Brunswick caravaners were awakened by enthusiastic supporters standing knee-deep in blizzard conditions, madly waving banners and pressing signed petitions up to the window. All this, despite a windchill of 40 below zero and the train an hour behind schedule.

Events across the country reflected the issues at stake in South Moresby: conservation and human rights. Conservation groups in St. John's, Newfoundland, remarked that the Caravan was helping to spotlight their own causes which had suffered serious setbacks during the highly charged confrontations over the sealing industry. Representatives from the Canadian Sealers Association attended the South Moresby slide show there and in Corner Brook, Newfoundland, pulp millworkers and forestry students attended Caravan events and pledged their support.

At a rally of more than 1700 people at St. Paul's Anglican Church in Toronto, the highlight of the evening was the arrival of the Haida elders, three of whom face possible two-year prison terms for defiant yet non-violent action in blocking a Lyell Island logging road in South Moresby. When they entered the church, the entire congregation rose to its feet in silent respect.

The Haida elders, who joined the Caravan in Toronto and cheerfully participated in the overland journey to Vancouver, touched the hearts of many and instilled in them the courage to act. When Ethel Jones spoke of her willingness to face a two-year prison term, not because she had anything to gain from it, but for "my grandchildren and your grandchildren," she brought applauding crowds to their feet. When 81-year-old Chief Watson Price referred to the other elders as "his partners in crime" it was in jest, but the implication brought tears to some eyes. Native, religious and student groups joined forces to give their support to the Haida who have lived on the islands for thousands of years.

The Caravan united widely diverse environmental groups and individuals, many of whom put in long hours of volunteer time organizing rallies, coordinating people and billetting travellers. It would be presumptuous to suggest that the Save South Moresby Caravan ushered in a new era of understanding between all the disparate groups concerned with wilderness preservation and native rights in Canada. But common ground, a willingness to communicate and a sense of celebration bridged cultural and geographic barriers. Somehow, Haida words seem appropriate in conveying appreciation to all those who came together and made that understanding, communication and sense of celebration possible: "How'aa Haada Laas." Thank you good people.

(From Nature Alert, C.N.F.)

Wildlife Centre at Webb, Saskatchewan, Open for 1986 Season

Regina, April 25, 1986. Federal Environment Minister Tom McMillan announced today that funds provided by Environment Canada and Saskatchewan's Department of Parks and Renewable Resources will enable the Prairie Wildlife Interpretation Centre at Webb, Saskatchewan, to open for a new season in mid-May.

The Centre will operate under the management of a private contractor while negotiations continue on a long-term arrangement under which the centre would be transferred to the private sector.

Local Member of Parliament Geoff Wilson, speaking on behalf of Mr. McMillan, expressed delight that discussions with a private contractor are proving so successful.

The Centre gives visitors an unique opportunity to view the ecology of five types of prairie wildlife habitat, each containing native animals and plants. Self-guiding trails, live displays of wildlife, prairie habitat exhibits and a theatre are part of a complex that covers 424 hectares.

School groups and community organizations will be able to visit the Centre from May 15 through the end of September. It will be open to the public during June, July and August from 8:30 to 18:00, seven days a week. The Centre is situated 30 kilometres west of Swift Current, on the Trans-Canada Highway at Webb.

For further information: Russell Wall, Webb, Saskatchewan, (306) 674-2287.

Congratulations to Scouts Canada

On June 5, 1985, World Environment Day, during the 1st World Environment Festival, Scouts Canada became the honoured recipient of the World Environment Festival Award. Presented by PROBE, the award recognizes Canadian Scouting's Trees for Canada program, its support of tree planting, irrigation, and agricultural and environmental education projects in developing countries, and its own efforts in learning about the environment.

In 1985, 120,000 members of Scouts Canada planted more than two million seedlings on conservation and waste lands across the country, pushing the total number of trees planted since the program began in 1974 to more than 37 million. Because 15% of the money raised through Trees for Canada goes to the Canadian Scout Brotherhood Fund to help with important community food, education and conservation projects in developing nations, the program is a mainstay of Scouts Canada's support for these projects. And, for members of Scouting's various sections, Trees for Canada provides a meaningful way to begin learning about the environment and the need for sound conservation practices.

ANNOUNCEMENTS

The 5th edition of the **"Check-list of Birds of the Calgary Region"** is now available. This newest edition is complete up until January, 1986. The previous (4th) edition - February 1976 - listed 309 species with 182 nesting. This new edition lists 330 species with 207 nesting.

In order to cover printing costs, the check-list is being sold at $1.00 each, or 5 for $4.00. On each order there is a 50 cent postage and handling fee.

Cheques and/or money orders are to be made payable to: Wayne W. Smith, 351 Alcott Crescent, S.E., Calgary, Alberta. Phone: 255-0052.

Alberta Bird Record - A journal of Alberta bird observation published four times yearly covering the Fall, Winter, Spring and Summer seasons. Subscription rate is $10.00 per year (make cheques payable to ABR). To subscribe or request a free sample copy write to ABR, C/O CFNS, Box 981, Calgary, T2P 2K4.

The James L. Baillie Memorial Fund For Bird Research and Preservation

Applications are welcome for funding in 1987. All applications should be submitted on forms available from the Secretary, and should be postmarked by 31 December 1986 to be guaranteed consideration by the Trustees.

Projects must be conducted in Canada, but applicants may reside elsewhere. Although all types of bird research are eligible for consideration, preference will be given to projects conducted by amateur researchers and to those by professionals who use a high level of amateur participation. Applicants lacking access to other funding sources will be given priority over applicants of similar quality with greater means of support. Application forms and further information can be obtained from: Martin K. McNicholl, Secretary, c/o Long Point Bird Observatory, P.O. Box 160, Port Rowan, Ontario N0E 1M0.

Loran L. Goulden Memorial Award Nominations

Nominations for the Loran L. Goulden Memorial Award for outstanding contributions to natural history in Alberta are sought at all times, but to be considered for the 12th Annual Award should reach the Chairman of the selection committee by 1 December 1986. The 12th award will be presented at the Annual General Meeting of the Edmonton Natural History Club in January 1987. Nominations may be for contributions in any field of natural history within the province of Alberta. All previous nominations of persons who have not yet received the award will be considered, but nominators of such persons are encouraged to update these nominations. Previous Awardees have been: Dick Dekker, W. Ray Salt, Charles D. Bird, Robert Lister, Joy Finlay, John M. Powell, Lois Fenna, Martin McNicholl, Fred Schutz, George Freeman, and Tim Myres. Nominations should be sent in writing to the Chairman or given to another member of the committee (Margot Hervieux, Edmonton; Mary Lore, Calgary; Gwen McCauley, Ottawa). John M. Powell, Chairman Loran L. Goulden Memorial Award Selection Committee, 5828-143 Street, Edmonton, Alberta T6H 4E8 (435-7006).

The Canadian Association of Nature and Outdoor Photographers has been chartered to serve the needs of amateur and professional photographers with an interest in outdoor activities and nature. The operational intention of CANOP is to provide a medium through which these people may communicate. This would allow them to share their experience, their skills and their knowledge. At present there is no easy or convenient way for this to be accomplished, and it is difficult for all but the professionals in the field to receive recognition for their work, or to learn the "tricks of the trade". Through the publication of a member-only magazine, and with the organization of workshops, seminars, and photographic expositions, it is possible to increase not only the awareness of the photographers as to what is available for them, but also of the general public as to the quality and expertise of Canadian photographers in this field.

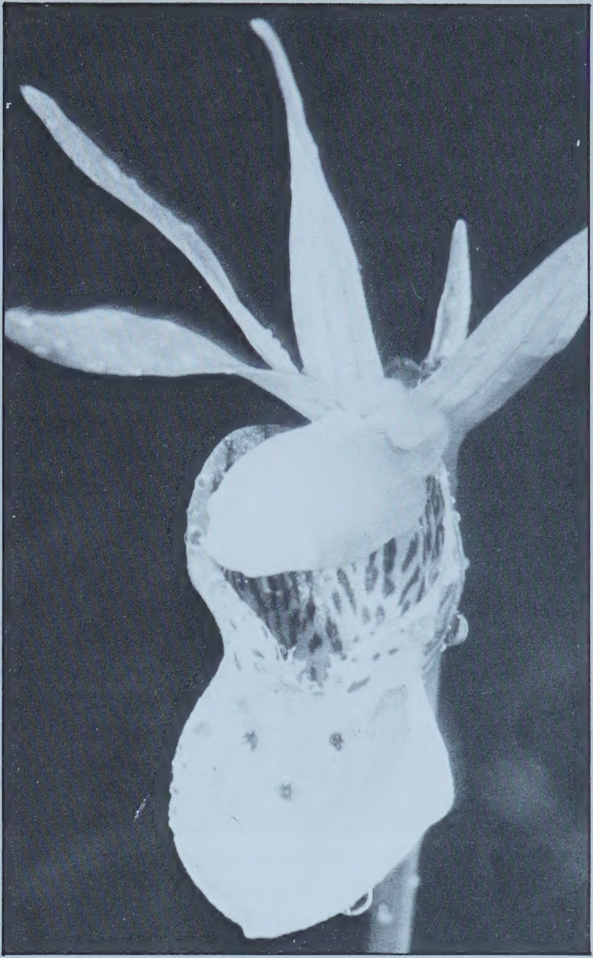
For further information contact HUGH TRUEMAN, Canadian Association of Nature and Outdoor Photographers, 77 Gerrard St. W., Suite #803, Toronto, Ont. M5G 2A1. Telephone (416) 593-6571 (evenings and weekends).

The Rare Vascular Plants of British Columbia

by Gerald B. Straley, Roy L. Taylor and George W. Douglas has just been published by the National Museum of Natural Sciences in Ottawa, as one of the Syllogeus series on the rare plants of the provinces. This publication was reviewed in *AN* Vol. 16, No. 1 p. 34.

Copies of *The Rare Vascular Plants of British Columbia* (Syllogeus No. 59) may be obtained free-of-charge by writing to: Rare and Endangered Plants Project, National Museum of Natural Sciences, Ottawa, Ontario, Canada K1A 0M8.

Similar lists of rare vascular plants have been published by the National Museum of Natural Sciences for Alberta, Manitoba, New Brunswick, Nova Scotia, Quebec, Saskatchewan, and the Yukon, and some of these are still available. Also, the *Atlas of the Rare Vascular Plants of Ontario* is nearing completion, with 3 of the 4 installments now published. Part 4 should be available in the fall of 1986. Order the *Atlas* and/or any of the other provincial rare plant lists free-of-charge from the address given above.



Venus Slipper (Calypso bulbosa), *one of the most popular of our native orchid species, graces coniferous forests with its beauty quite early in the spring.*

Photo: J.D. Johnson

DOUBLE L SADDLERY & LEATHER SHOP

SALES • SERVICE • RENTALS

ON SPECIALIZED OUTDOOR AND CAMPING EQUIPMENT FOR THE

X-COUNTRY SKIER • HIKER • BACKPACKER • HORSEPACKER • CANOEIST

Repairs on all kinds of equipment

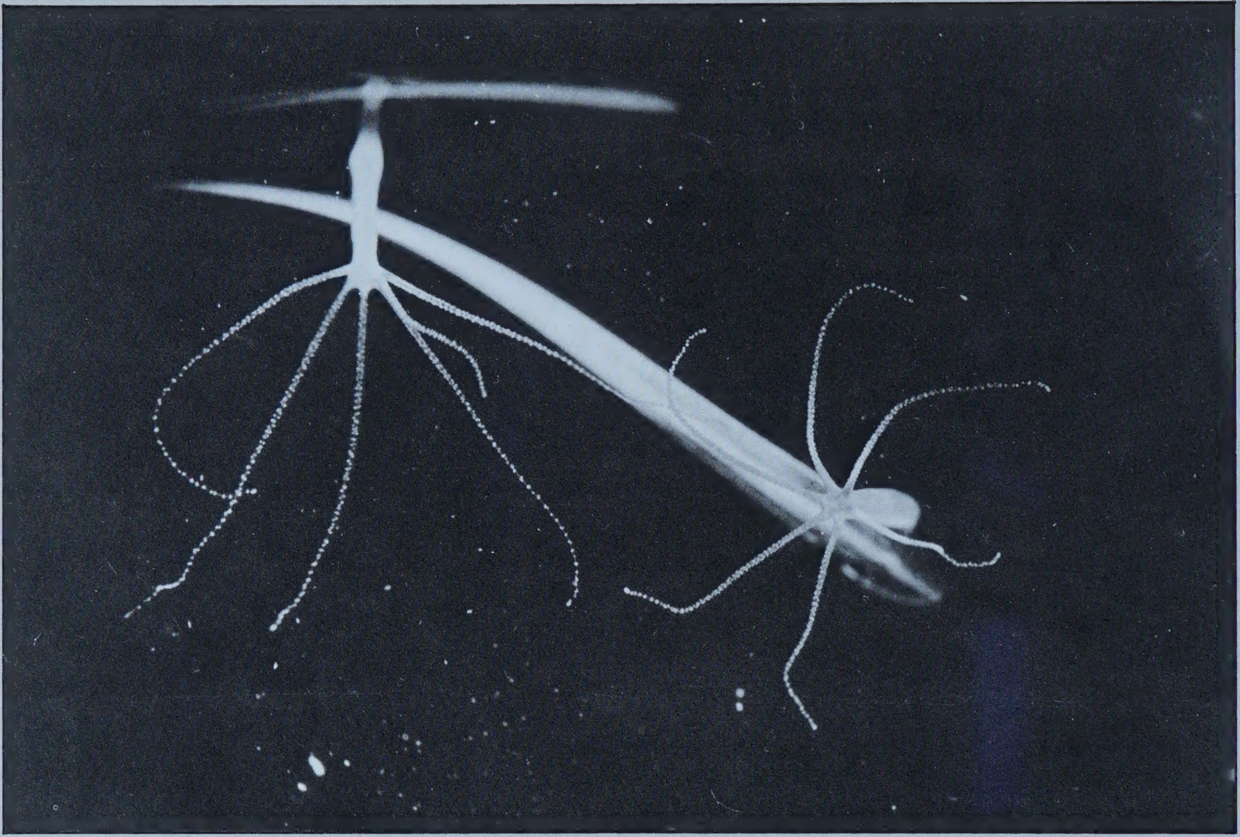
10% discount on new equipment to Naturalist Club Members

All products personally tested

LLOYD M. LOHR

Box 1414, Stettler, Alberta T0C 2L0

Phone (403) 742-3846



Hydras *are fresh-water relatives of the jellyfish. They are predators of small crustaceans, worms, and insect larvae. After capturing its prey by means of stinging cells on the tentacles, the hydra then draws the prey into its mouth at the base of the tentacles. Hydras are generally sessile but can inch around slowly on the foot of their stalk or even somersault to move to a new location. Reproduction is often by budding, and several offspring of different sizes may be attached to the parent at a given time. Of the 14 North American species, one (*Hydra canadensis*) has only been reported in lakes around Edmonton. It has tentacles that are exceptionally long — up to 5X the column length of 17 mm. The total extended length can be as much as 100 mm.*

(Photo and Caption by Tom Branch)

F.A.N. Membership Fees Are: Regular $10 per year; Supporting, $25 or more per year (with excess over $10 being deductible from your taxable income):

ENCLOSED IS $______ COVERING A ______ YEAR REGULAR MEMBERSHIP

ENCLOSED IS $______ COVERING A ______ YEAR SUPPORTING MEMBERSHIP

NAME ______________________________

ADDRESS ______________________________

______________________________ POSTAL CODE ______________

SEND TO:
FEDERATION OF ALBERTA NATURALISTS
Box 1472, Edmonton, Alberta T5J 2N5

Profiles on Risk Status of Canadian Birds: 3.
Loggerhead Shrike

Martin K. McNicholl

The Loggerhead Shrike (*Lanius ludovicianus*) is the only exclusively North American species of a largely Afrotropical family of birds. Although generally regarded as a full species, some authorities regard it as a race of the similar Northern or Great Gray Shrike (*L. excubitor*), the only other shrike found in Canada. In Canada, it is primarily a breeding bird of the prairie portion of the prairie provinces and of the agricultural belt south of the Great Canadian Shield in southeastern Ontario, southern Quebec and New Brunswick, with few records in British Columbia and rare nesting in Nova Scotia.

Clarke (1972) commented on its decline in Ontario about the same time that the blue list of North American birds showing non-cyclical declines was first published, a list on which the species appeared annually, with declines as sharp as 70% reported in some areas. Goodwin (1977), commenting that it was "almost gone" from southern Ontario, considered it "seriously endangered" in Canada and more recent analyses of Christmas Bird Count data and Breeding Bird Survey data have strongly supported the "blue list" designation for North America as a whole, with minor bright spots in southern and western portions of its range in the U.S. Tate and Tate (1982) called for serious study on the species, and a recent such status study in Canada recommended that it be classed as Threatened in Canada, a designation adopted by the Committee on the Status of Endangered Wildlife of Canada (COSEWIC) in April 1986.

Documentation of such declines in Canada relies primarily on Breeding Bird Survey data and impressions of regional experts. The stronghold of their breeding population in Canada remains on the prairies, where impressions of a decline are widespread. In Alberta, the Edmonton Bird Study Group listed the Loggerhead Shrike among species recommended for a provincial risk list, and although Breeding Bird Survey data from 1966 to 1979 did not show a significant decline in statistical terms, a comparison of 1972-1977 data with figures from 1978-1983 suggests sharp reductions in both southern and central areas. In Saskatchewan, Breeding Bird Surveys average the highest numbers of shrikes per route in Canada, but declines are at a statistically significant level. In the Saskatchewan portion of the Qu'Appelle Valley, Callin (1980) noted a "definite decrease in numbers" since about 1957. The one bright spot on the prairies appears to be in the extreme southeastern corner of Saskatchewan and southwestern corner of Manitoba, where Knapton (1979) considered it a "familiar sight," noting especially high numbers in 1976, and impressions of local observers are still less pessimistic than in most areas. Breeding Bird Survey data show a sharp decline in Manitoba, though one data point involving one route precluded statistical significance. Taylor (1985) noted that they were formerly more frequent in the Pinawa area in southeastern Manitoba than at present. David R.M. Hatch, whose birding experience has covered a wide area of the province for many years, before most of the current observers there were active, feels that they have declined markedly in the last 25 years and echoing Goodwin's (1977) remarks cited above, suggests this "may be our most endangered species".

Breeding bird survey data in Ontario show a statistically significant decline in the province, where 1.2 birds per 50 stops was the highest average of any degree-block from 1968 to 1977, 0.5 being the next highest figure, and most degree-blocks not showing the species. These data support observations by Clarke (1972), Goodwin (1977), Eagles and McCauley (1982) and Speirs (1985) of general declines in the province, and Bennet (1985) noted that he received no reports of this species on 27 spring "round-up" contributions from Ontario in 1985. In the Ottawa, Ontario-Hull, Quebec area, Erskine (1985) found this species more common in the 1950s than in the 1960s and 1970s, and other reports there indicate a continuing and dramatic decline. Initial reports of the Ontario Breeding Bird Atlas recorded more birds than expected, primarily along the southern edge of the Great Canadian Shield.

A decline in Quebec started around 1958 and except for 1968 and 1969 appears to have been steady, with numbers too low by 1966 for Breeding Bird Survey data analysis of obvious downward trends. Few birds are now even sighted annually in Quebec, and the first year (1984) of their breeding bird atlas produced only one record of a successful nesting, while early returns in 1985 revealed only one pair.

This species was evidently never common in the New Brunswick portion of its breeding range, and has not been recorded in the Breeding Bird Survey there in recent years. Its Nova Scotia range was at best very localized and probably temporary.

Goodwin's (1977) statement that the cause(s) of the steady decline of Loggerhead Shrikes remain obscure still applies today. The chief suspects appear to be loss of habitat and chemical contamination, possibly in combination. Natural factors such as predation, weather and competition with other species may play a role, but as these have always been in force seem unlikely explanations in themselves. In Ontario, loss of thorny pastures and roadside hawthorns has long been implicated, a suggestion that is at least partially supported by its current stronghold along the southern edge of the shield, where oldfield habitat with hedgerows and hawthorns can still be found. On the prairies, more intensive farming practices are encroaching more and more on wooded coulees, and sloughs, often surrounded by scrubby vegetation, are being increasingly drained, reducing nesting habitat. Prairie naturalists have long recognized the greater ease with which predators can find waterfowl nests as strips of habitat become thinner. As shrikes nest in essentially "edge" habitat, this may affect them less than some species, but a study of this species in Missouri showed greater nesting success where cover reduced predation and wind effects.

As some areas of apparently suitable habitat lack shrikes, habitat loss does not provide a complete explanation for shrike declines. Bent (1950), commenting on the food of one of the races, noted that "Migrant Shrikes" are more insectivorous than the Northern species, a factor that could make it more susceptible to chemical insecticides, and as herbicides are used frequently to clear roadside vegetation attractive to this species, these chemicals may also produce undesirable side effects. A study in Illinois indicated an inverse relationship between eggshell thickness in this species and levels of DDE, and studies of clutch size patterns on the prairies by Glen Fox are suggestive of chemical contamination. Morrison's (1979) finding of no difference in thickness of shrike eggshells before and after the DDT era does not necessarily rule out chemical contamination as chemicals can act in various ways on an organism, and most of Morrison's samples were from California, one of the few areas where the species appears to be stable.

Loggerhead Shrike at nest.

Photo:
Gary R. Jones

Shortly after automobiles came into relatively common usage, Loggerhead Shrikes were found to be susceptible to being killed by them and this appears to be an important factor currently in parts of Canada. Indeed, its habit of nesting in roadside thickets and its hunting behaviour coincide closely with factors that make birds most susceptible to this hazard.

The finding of Bildstein and Grubb (1980) that Loggerhead Shrikes and American Kestrels were distributed non-randomly on a wintering ground study area suggest that these two species of similar food habits were competing, but competition between these species seems an unlikely explanation for widespread declines of shrikes, especially as the kestrels have also shown declines in some of the areas depleted of shrikes. A cause common to both seems more likely.

Clearly, this shrike has declined dramatically in Canada and over most of its range. Studies documenting its current range and investigating possible reasons for its decline are needed urgently if its slide into Threatened status is to be halted before the Endangered stage is reached.

Literature Cited:

Bennet, G. 1985. Birding the Trans Canada Highway. Lap 24 Hearst to Nipigon, Ont. *Birdfinding in Canada* 5(4):3-6.

Bent, A.C. 1950. Life histories of North American wagtails, shrikes, vireos and their allies. *U.S. Natl. Mus. Bull.* 197 (Dover reprint 1965).

Bildstein, K.L., and T.C. Grubb, Jr. 1980. Spatial distributions of American Kestrels and Loggerhead Shrikes wintering sympatrically in eastern Texas. *Raptor Res.* 14:90-91.

Callin, E.M. 1980. Birds of the Qu'Appelle, 1857-1979. Sask. Nat. Hist. Soc. Spec. Publ. No. 13.

Clarke, C.H.D. 1972. Of shrikes and hawthorns. *Ont. Nat.* 11(2):16-17.

Eagles, P.F.J., and J.D. McCauley. 1982. The rare breeding birds of Ontario. Dept. Recreation and Dept. of Man-Environ. Studies, Univ. Waterloo, Waterloo.

Erskine, A.J. 1985. Birding in Ottawa, back when... *Trail & Landscape* 19:250-253.

Goodwin, C.E. 1977. Rare and threatened birds of Canada. pp. 85-87 *in* T. Mosquin and C. Suchal (Eds.). Canada's threatened species and habitats. Can. Nature Fed., Ottawa.

Knapton, R.W. 1979. Birds of the Gainsborough-Lyleton region (Saskatchewan and Manitoba). Sask. Nat. Hist. Soc. Spec. Publ. No. 10, Regina.

Morrison, M.L. 1979. Loggerhead Shrike eggshell thickness in California and Florida. *Wilson Bull.* 91:468-469.

Speirs, J.M. 1985. Birds of Ontario. Vol. 2. Natural Heritage, Toronto.

Tate, J., Jr. and D.J. Tate. 1982. The blue list for 1982. *Amer. Birds* 36:126-135.

Taylor, P. 1985. Wings along the Winnipeg. The birds of the Pinawa - Lac du Bonnet region, Manitoba. Man. Nat. Soc. Eco. Ser. No. 2, Winnipeg (reprinted from 1983 ed. with suppl.).

Author's Address:
Long Point Bird Observatory, Box 160, Port Rowan, Ontario
NOE 1M0.

Goshawk Attacks Mallards

Gerry Wilkie

On December 21, 1985, at 0900, Joey Shulman, Barry Siegrist and I began our participation in the Bow Valley Naturalists' Christmas Bird Count at the Johnson's Lake main parking lot in Banff National Park. We walked to the beaver ponds above the lake where we observed 25 Mallards in open water. As soon as we moved on up the trail, the Mallards flew and circled us twice before disappearing.

At 1135 we returned to the same spot, and observed a mid-air collision between a drake Mallard and another bird which we realized was a Northern Goshawk. The hawk seized the fluttering Mallard and dragged it down to the ice. At the time of collision, the birds were at about 12 m in altitude and we were about 20 m away. We moved closer to get a better look. The birds struggled for about 15 seconds on the ice and the hawk then flew up, obviously disturbed by us. It flew over at an approximate altitude of 10 m and disappeared to the west. The Mallard flew weakly to open water where it swam around for about one minute. It then flew over the main dam and landed on the outfall ponds out of sight.

After a few minutes of excited conversation, we moved on down the trail, planning to have lunch on a boardwalk viewing platform near our starting point in the morning. At 1155, as we came out of the forest above the footbridge on the outfall creek, we observed the Goshawk attack a drake Mallard that was swimming slowly in the creek 25 m below the bridge. Again we are convinced that our presence scared away the Goshawk which flew down the creek and disappeared. At this point, we lost sight of the Mallard and believe it took shelter under one of the vegetative hummocks growing on fallen trees along the creek. After a few minutes of scanning the creek for sign of the Mallard, we walked over the boardwalk about 150 m away where we proceeded to have lunch. At 1235 we saw the Goshawk fly across the lake in the direction of the beaver ponds. At 1245 the Goshawk flew into the top of a large Douglas Fir tree approximately 100 m from the boardwalk and about 50 m from the site of the second attack. It watched the creek intently. At 1255 it flew away again toward the beaver ponds. At 1305 we left the area.

Author's Address:
Box 347, Banff, Alberta T0L 0C0.

Further Notes on Bison in Northern Alberta

Bob Gainer

Van Zyll de Jong (1961) has presented a systematic evaluation of the geographic variation and subspeciation of recent bison. He concluded that there was a phenotypic discontinuity associated with the grassland boreal forest ecotone that fully justified recognition of the two current subspecies, the Plains Bison (*Bison bison bison*) and the Wood Bison (*B.b. athabascae*).

Jack Van Camp of Fort Smith NWT, mentioned to me that during his studies of bison he had learned that the Woods Cree native to the boreal forest actually have separate names for the two animals. Returning to Fort Vermilion, I availed myself of the linguistic expertise of the Cree buffalo hunters of the Little Red River Band. According to Mr. Pious Laboucan of Fox Lake the Cree name for the short-tailed, smaller and meaner animals (Plains Bison) is "chim-ey-os" or "short tails", and the longer-tailed, larger and quieter ones "kin-ey-os", "long-tails". Bruce Blessie of Garden River says his people call the "bush" buffalo "si-kow-mustos" and the plains buffalo "pus-kow-mustos." The differentiation of two types of bison by size and tail length is consistent with Van Zyll de Jong's findings.

Bison are often seen in northern Alberta outside Wood Buffalo National Park. See the article "Free roaming bison in northern Alberta" by Bob Gainer, Alberta Naturalist 15(3): 86-87. However, these photographs were taken in the bison enclosure at Banff National Park. Photos: G.L. Holroyd

Further inquiry with long-time resident (since 1919) Mr. James Ward, revealed that prior to the introduction of the Plains Bison into Wood Buffalo Park during the 1920's, bison were rarely seen in the Fort Vermilion area. Then, for 10-15 years after the introduction, they noticed many animals in their area. Residents assumed that they were going to be blessed with an unlimited supply of buffalo for their own personal use, but their number became much less. Today there are occasional visits by bison to the farmland but mostly the animals remain in the prairies and forests outside the cultivated area between the Park and the farmland (Gainer, 1985). This last winter, approximately 20 bison were shot west of Fox Lake. Mr. Glen Chantel, Fish and Wildlife Officer for Fort Vermilion, reports that a herd of approximately 15 animals was seen this winter high in the Caribou Hills near Wentzel Lake. Normally, in winter bison move to the low ground to forage slough hay (Van Camp, 1975).

Ernest Thompson Seton (1911), in his discussion of the Wood Bison population at the turn of the century, mentioned that his assessment in the Fort Smith area had to be supplemented with a recent discovery by Park Wardens of a herd in the Caribou Hills area. Nevertheless, his assessment supported Mr. Ward's observation that prior to the introduction of the plains animals there would have been few bison in the area.

Stefansson (1957) and Seton (1911) both mention the dependance of northern Canadians on pemican, especially bison pemican, for winter travel during the 1800's. The highways for this travel and for the fur trade were rivers. Associated with the rivers and adjacent lowlands in winter, would be bison seeking winter feed. Long before the farming activity in the southern prairies and the buffalo slaughter of the 1870's, European commerce was at its peak in the range of the Wood Bison. Considering the dependence of winter travellers on pemican, the hunting pressure on the bison along the rivers in winter would have been tremendous, probably accounting for their low numbers in remote locales as referred to above. Van Camp's (1975) theory that bison didn't actually migrate long distances to mild environments in winter, but instead had local movements from high ground to low ground in search of slough sedge, would also mean that Wood Bison would be more accessible to human hunters. Even today almost all bison are shot in winter, in this area and in other native communities adjacent to the park.

Literature Cited:

Gainer, R. 1985. Free roaming bison in Northern Alberta. Alberta Naturalist 15: 86-87.

Seton, E.T. 1911. The Arctic Prairies. Harper and Row, New York. pp. 415.

Stefansson, V. 1957. The Fat of the Land. MacMillan Co. 339 pp.

Van Camp, J. 1975. Snow conditions and the winter feeding behavior of *Bison bison* in Elk Island National Park. Can. Wildl. Serv. Rep. CWS. -53-75. 91 pp.

Van Zyll de Jong, C.G. 1961. A Systematic study of recent bison, with particular consideration of the Wood Bison *(Bison bison athabascae* Rhoads 1898). National Museums of Canada No. 6. 69 pp.

Former Sightings of Whooping Cranes in the Fort Vermilion Area

Bob Gainer

The 1986 spring issue of Alberta Naturalist carried a note asking for information on Whooping Crane sightings away from their normal flyway. Some of the long-time residents of Fort Vermilion remember their occasional appearance in the past. Mr. James Ward, resident of the area since 1919, mentions that during the 1940's, groups of 4-6 were often seen in the stubble fields near the Ward's original homesite 40 km southwest of Fort Vermilion. The birds would stay a few days, then disappear.

Since the 1940's, Whooping Cranes have rarely been seen in this area but in the spring of 1981 Mr. Ward observed several on a mudflat 1 km downstream of Fort Vermilion on the Peace River. Afterwards, Mr. Howard Patmore, formerly familiar with the birds on his farm near Meadow Lake, said that he had seen Whooping Cranes in his field 16 km north of Fort Vermilion. They were also seen by a neighbor, Mr. Warren Johnston.

Mr. Ward mentioned that he only noticed adults in spring, but a local trapper, Mr. Leo Schaetzle said that in the fall of 1973 near the junction of the Wabesca and Peace Rivers, 40 km downstream from Fort Vermilion, he saw two adults and two young fly low overhead.

Geographically, this area is approximately 100 km west and 300 km south of the nesting area of the cranes. The Caribou Hills would form a fairly large barrier that the birds would probably want to avoid. A light aircraft averaging 150 kph requires approximately 2 hours to follow this route to the nesting area.

Author's Address:
Northwest Veterinary Service, Box 307, Ft. Vermilion, Alberta
T0H 1N0.

Fish-Catching Mink in Calgary

Frances Roback and Steve White

We observed a mink in Bowness Park on January 15 and 19, 1986, and we went looking for it once again on January 26, a Chinook-mild, overcast Sunday morning.

As on the two previous occasions, the mink was spotted on the edge of an ice shelf bordering on the open water of the Bow River, in the western portion of Bowness Park. The mink was slowly moving west (upstream) at the water's edge, pausing frequently to look around. At about 20 m upstream from the point where it was first sighted, it remained immobile for several minutes. It then slipped into the water and disappeared from view. When sighted again a minute or two later, it was at least 50 m further upstream on the edge of the ice, crouched over a small fish. After a few minutes it picked up its catch in its mouth, slipped into the water, and swam rapidly to the opposite bank.

The trees lining the shoreline obscured our view and we headed upstream to the point where we thought the mink might have landed. We spotted it no further than 8 m away, under an ice overhang at the water's edge, with the fish still gripped in its mouth. After a few minutes, the mink clambered up to the top of the ice shelf and ran along it, crossing directly in front of and below us as we stood on the bank, at a distance of about 2 m. The fish was ca. 18 cm long, with a dark back and pale undersides, probably a trout. At this point we became aware of a dog's presence behind us, and we decided not to track the mink further for fear of alerting the dog.

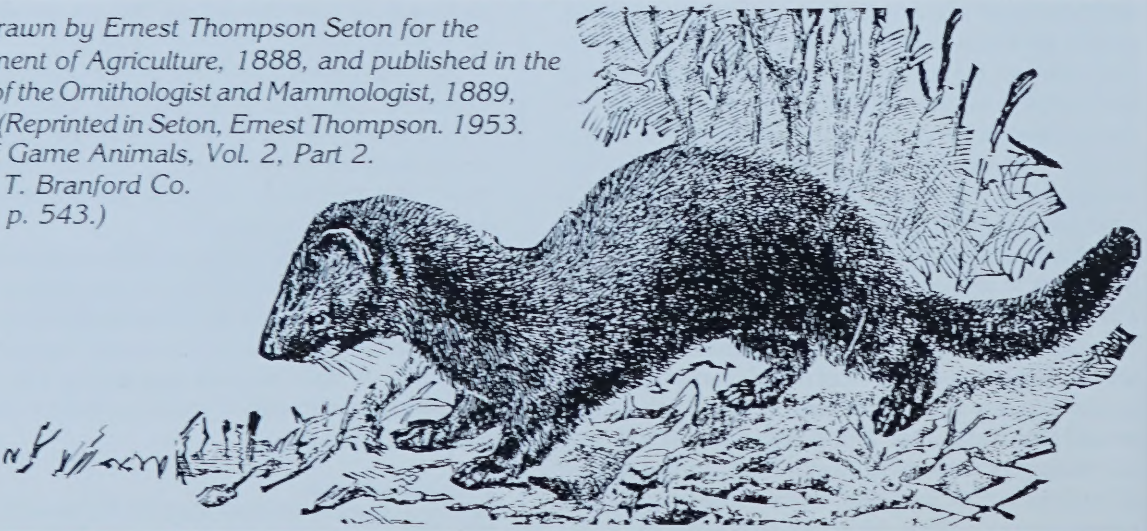
Several points have emerged from the three sightings. (1) The mink appeared more disturbed by the presence of a dog than by human observers. (2) Rather than eating its meal on the spot, the mink chose to carry it over a number of obstacles (crossing the river and past two observers) to its burrow. Also Savage (1981) and Wooding (1982) reported mink carrying food back to its den. (3) Following light snowfalls, on February 2 and 11, we located the characteristic double mink tracks leading to four or five burrows in the bank. All but one were concentrated about 300 m downstream from the park's western tip. There is at least one other burrow further upstream. Mink tracks were noticeably absent from the bank and ice shelf between the two burrow areas. This may mark the boundary line between two mink territories, and we now believe two mink are resident in the area. (4) Although it is considered a nocturnal species, the mink was active during the day. The first sighting was at noon; the second and third were around 10 AM. All subsequent trips to spot the mink during daylight hours have been unsuccessful, although we never failed to locate fresh tracks.

Literature Cited

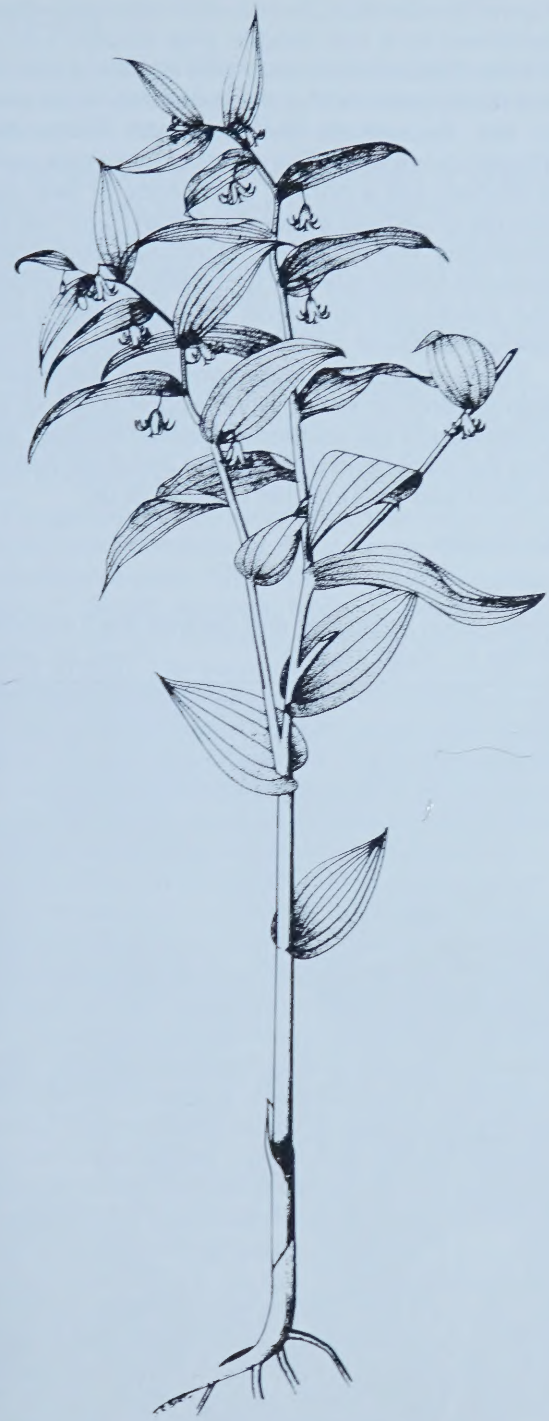
Savage, Arthur and Candace Savage. 1981. Wild Mammals of Western Canada. Western Producer Prairie Books, Saskatoon. p. 109.

Wooding, Frederick H. 1982. Wild Mammals of Canada. McGraw-Hill-Ryerson Ltd., Toronto. p. 112.

Authors' Address:
8108-47 Ave. N.W., Calgary, Alberta T3B 1Z5.



Mink, drawn by Ernest Thompson Seton for the Department of Agriculture, 1888, and published in the Report of the Ornithologist and Mammologist, 1889, p. 488. (Reprinted in Seton, Ernest Thompson. 1953. Lives of Game Animals, Vol. 2, Part 2. Charles T. Branford Co. Boston. p. 543.)



*Clasping-leaved Twisted Stalk (*Streptopus amplexifolius*) favors moist, shaded forests and in Alberta it is most common in the western portions of the province.* Line Art: Gordon Barth

NATURALISTS BOOKSHELF

Wildflowers of the Canadian Rockies

by George W. Scotter and Halle Flygare. 1986. Hurtig Publishers Ltd., Edmonton, Alberta, Canada T5H 2W7. Paper, $19.95.

I was told of a mountain hiking group whose members gained a greater appreciation for the area they visited through their combined expertise in the fields of geology, archeology, ornithology, mammalogy and astronomy. The group was, however, assailed with a bounty of floristic colour that they could only appreciate to a limited extent; there was no botanist in the crew to name these vibrant spots of beauty and impart some tidbits of knowledge about them. For this group, and others like them, there is now at least a partial answer in this new volume of mountain wildflowers. To quote the authors, "Being able to recognize plants...and call them by name is an indispensible first step in a deeper understanding and appreciation of the natural world around us."

The Rocky Mountains are introduced through a brief description of the different vegetation types within the montane, subalpine and alpine zones. The pictures, however, are only scenic and allow no identification of the many trees, grasses, and lower plants mentioned here but not included in the main text. All trees, mosses, lichens, ferns and fern allies, grasses and sedges, willows, and most rare species are excluded from the main text, though introduced plants are included if they are common.

The 288 species described in the text, representing 41 plant families, are divided into four sections based on flower colour: white, yellow, pink and purple. Unfortunately, related species are not grouped together within these sections, nor are they in any discernible order. This random arrangement is a major drawback for the use of this book by novices. It is difficult to contrast two similar species such as the poisonous Water Hemlock *(Cicuta maculata)* and the edible Cow Parsnip *(Heracleum lanatum)* simply from photos of the inflorescences which are separated by 24 pages. The descriptions must be examined in detail to avoid any possible mistake.

Each species is listed by common name(s), scientific name(s), and common family name. For some reason, scientific family names are listed separately in the back. Also unfortunately, the indices by scientific and common names are listed separately. The back of the text includes a brief glossary and some line drawings explaining the few technical terms which are employed in the descriptions.

What makes this book enjoyable despite the failings mentioned above, is the high quality of most of the photographs (a few did not reproduce blue very well) and the inclusion of medicinal, folkloric, historic and habitat information about various plants. Do you know the origin of the name for Soapberry *(Shepherdia canadensis),* the vitamin content of Mountain Sorrel *(Oxyria digyna),* that Alpine Smelowskia *(Smelowskia calycina)* is often deformed by a rust fungus, that Hooded Lady's Tresses *(Spiranthes romanzoffiana)* have a distinctive vanilla scent, or that the only carnivorous plant in the Rockies is the Common Butterwort *(Pinguicula vulgaris)*? The extent of these exposures is limited, just a phrase, a sentence or two, just enough to perhaps entice the reader to further explorations. The bibliography includes commonly available works relevant to the flora of the region and invites you to extend your knowledge with references about edible and useful wild plants.

These interesting facts constitute the second step towards an enlightened appreciation of the wildflowers of the southern Canadian Rockies: putting the plants and their names into their natural context and relating this context to us.

D. Fabijan

Drummond's Thistle (Cirsium drummondii) *occurs in moist, open meadows and thickets from eastern B.C. to northwestern Ontario and southward from California to South Dakota.* Photo: J.D. Johnson

The Vascular Plants of South Dakota

(Second Edition) Theodore Van Bruggen. 1985. Iowa State University Press, Ames, Iowa. Introduction + 476 pp. US $28.95 paper.

Five hundred kilometres southeast of Alberta, South Dakota may seem too remote to concern Alberta naturalists. In fact, Great Plains and Rocky Mountain Montane vegetation occurs in both areas and many plant species are shared, so Dr. Van Bruggen's popular flora ought to interest many Alberta botanists.

The book provides a brief introduction to the natural geography of South Dakota, keys and descriptions of 1608 species (quite similar to the size of Alberta's flora), and an excellent glossary.

The geology, physiography, climate, vegetation and floristic elements of the state are described in the Introduction. Three rather untidy full-page maps of glacial deposits, bedrock geology and physiography are included, but in general the text is well written. The vegetation section provides a slight exception. 'Chief' woody and/or herbaceous species are listed for the Eastern Deciduous Forest, Plains, Prairie, and Black Hills Montane regions and the Wooded Bottomlands and Lake, Pond and Prairie Pothole environments, however the author's definition of chief species is inconsistent. In some cases they are widespread and abundant in the region or environment, but in other cases, although they are distinctive, they are not necessarily widespread or abundant. Lists of widespread, abundant and distinctive species in each region and environment would be useful, as well as a brief mention of the most widespread and distinctive vegetative associations. Those interested in rare plants will be disappointed to find out that Schumacher's 1975 compilation of taxa endangered in South Dakota is not listed, incorporated in the text, or referred to in the bibliography. Nevertheless, the author has made some timely observations on the loss of, and disturbances to, natural vegetation.

I have not had sufficient opportunity to test the keys and species descriptions, but the former seem well constructed. The incorporation of species descriptions within the keys is unconventional, and deserves special comment. Many naturalists rely on very few characters when identifying plants, and this leads to some unfortunate misidentifications. Because Van Bruggen has built the species descriptions into his keys, users are more likely to consider a whole suite of characters. This advantage must be weighed against the difficulty encountered when comparing species within large genera, for their descriptions are often spread over several pages. The species descriptions are very brief, and few synonyms are noted.

The flora is a handy size for the field (even smaller than the *Flora of Alberta*), but the text is crowded and there are no illustrations or range maps. Some typographical errors were found (for instance the italicization of a heading on page xxi), but they are not serious.

Despite its limitations, this book provides a good introduction to an interesting flora. The price is a little steep considering the contents and publication quality, however I recommend it to naturalists, particularly those who travel southeast of Alberta.

Matt Fairbarns

Birds of Nahanni National Park, Northwest Territories

George W. Scotter, Ludwig N. Carbyn, Wayne P. Neily and J. David Henry. Available from the Saskatchewan Natural History Society (Box 1121, Regina, Saskatchewan. S4P 3B4, $7.00.)

This booklet is an excellent addition to the library of anyone interested in bird watching in Nahanni. It provides a brief ecological description of the park and its climatic conditions, with special reference to six specific sites, the locations from which the majority of the bird records, referred to in the text, are derived. The only problem found with the book was with Figure 2 that does not indicate the names of the 6 sites referred to in the text.

The checklist of birds includes the number observed, the date, observer, and location. The checklist also indicates the abundance of the species in the park, and its nesting status. In addition, various tables have been added to the text which indicate what bird species to expect in certain habitats and at certain sites. Much of this information could be applied to areas outside the park at similar latitudes.

This book should assist Nahanni National Park staff in improving the knowledge on the birds of the park by enticing park visitors to send in their findings. Specialists and amateurs alike will find this book to be an excellent reference manual.

H. Loney Dickson

Recent Publications on the Natural History of Alberta

Compiled by David M. Ealey and Martin K. McNicholl

Naturalists

Awards Committee Members. 1985. 1984 Honorary Memberships and OFNC awards. Trail & Landscape 19:196-200. - including Daniel F. Brunton and C. Stuart Houston.

Gummer, W.K. 1985. Honorary members and 1984 Ottawa Field-Naturalists Club awards. Can. Field-Nat. 99:547-548. - D.F. Brunton and C.S. Houston.

Holroyd, G.L. 1986. The role of the volunteer in wildlife conservation. Proceedings of the Eighth Annual North American Bluebird Society Conference. Red Deer, Alberta. July 12-13, 1985. pp. 26-32.

Houston, C.S. 1986. Dr. John Richardson, first naturalist in northwest Canada. Proceedings of the Eight Annual North American Bluebird Society Conference. Red Deer, Alberta. July 12-13, 1985. pp. 33-35.

Jones, K. 1986. The CFNS bird study group during 1985. Pica 6(3):28-30.

McFetridge, B. 1986. Glimpses of the past: P.A. Taverner (1875-1947). Biome 6(2):3.

Poelman, L. 1986. Bluebird's outstanding friend. Can. Geogr. 106(2):36. - Duncan MacIntosh.

Climate

Christison, T. 1986. Snow-eater. The Chinook turns winter into spring in an hour. Nature Canada 15(2):16-22.

Van Tighem, K. 1986. When the Climate fails. Nature Canada 15(2):22.

Geology

Van Dine, D.F. 1985. Debris flows and debris torrents in the Southern Canadian Cordillera. Can. Geotechnical Journ. 22(1):44-68.

Water

Anonymous. 1986. The Canadian Heritage Rivers System. Status report - November 1985. Park News 22(1):31-32.

Durrant, E.F. 1986. An appraisal of future water needs and sources in western Canada. Can. Water Resources Journal 11(1):1-13.

Farley, D.W. and H. Cheng. 1986. Hydraulic impact of flow regulation on the Peace-Athabasca Delta. Can. Water Resources Journal 11(1): 26-42.

Gravelines, G. 1986. Water Issues. Environment Views 8(6):4-9.

Hammer, U.T. 1986. Saline lake water resources of the Canadian Prairies. Can. Water Resources Journal 11(1):43-57.

Vascular Plants

Hallworth, B. 1986. The university prairie. Pica 6(2):4-9.

Prange, R.K. and P. Von Aderkas. 1985. The biological flora of Canada. 6. *Matteuccia struthiopteris* (L.) Todaro, Ostrich Fern. Can. Field-Nat.99:517-532.

Russell, W.B. 1985. Vascular flora of abandoned coal-mined land, Rocky Mountain foothills, Alberta. Can. Field-Naturalist 99(4):503-516.

Van Dyk, M., R. Currah and A. Smreciu. 1985. Wild flowers of the Sandhills, Devonian Botanic Garden. A preliminary listing of flowering plants, ferns and fern allies, mosses, lichens, and fungi. Devonian Botanic Garden, University of Alberta, Edmonton. 94 pp.

Invertebrates

Adamski, D. and T.M. Peters. 1986. Review of Nearctic *Apotomis* Hubner (Lepidoptera: Tortricidae: Olethreutini). Can. Ent. 118 (7):649-689.

Boag, D.A. 1986. Dispersal in pond snails: potential role of waterfowl. Can. J. Zool. 64:904-905.

Gibson, G.A.P. 1986. Evidence for monophyly and relationships of Chalcidoidea, Mymaridae, and Mymarommatidae (Hymenoptera:Terebrantes). Can. Ent. 118(3):205-240.

Gibson, G.A.P. 1986. Mesothoracic skeletomusculature and mechanics of flight and jumping in Eupelminae (Hymenoptera, Chalcidoidea:Eupelmidae). Can. Ent. 118(7):691-728.

Kralka, R.A. 1986. Population characteristics of terrestrial gastropods in boreal forest habitats. American Midland Naturalist 115(1):156-164.

Lafontaine, J.D., V.S. Kononenko, and T.L. McCabe. 1986. A review of the *Lasionycta leucocycla* complex (Lepidoptera:Noctuidae) with descriptions of three new subspecies. Can. Ent. 118(3):255-279.

Parsons, W.F.J. and D. Parkinson. 1986. Species composition, distribution and abundance of collembola colonizing reclaimed mine spoil in Alberta. Pedobiologia 29(1):33-46.

Sarazin, M.J. 1986. Primary types of Aculeata (Hymenoptera) in the Canadian National Collection. Can. Ent. 118(4):287-318.

Sarazin, Michael J. 1986. Primary types of Symphyta (Hymenoptera) in the Canadian National Collection. Can. Ent. 118(7):621-640.

Vockeroth, J.R. 1986. Revision of the New World species of *Paragus* Latreille (Diptera:Syrphidae). Can. Ent. 118(3):183-198.

Wit, Luke de. 1986. Swarming of snowfleas. Pica 6(3):24-27.

Wong, H.R. and D.L. Szlabey. 1986. Larvae of the North American genera of Diprionidae (Hymenoptera: Symphyta). Can. Ent. 188(6):577-587.

Parasites

Bush, A.M. and J.C. Holmes. 1986. Intestinal helminths of Lesser Scaup ducks: patterns of association. Can. J. Zool. 64:132-141.

Bush, A.M. and J.C. Holmes. 1986. Intestinal helminths of Lesser Scaup ducks: an interactive community. Can. J. Zool. 64:142-152.

Bush, Albert O. and W.M. Samuel. 1981. A review of Lelminth communities in beaver (*Castor* spp.) with a survey of *Castor canadensis* in Alberta, Canada. Proc. Worldwide Furbearer Conf. pp.678-689.

Keith, I.M., L.B. Keith and J.R. Cary. 1986. Parasitism in a declining population of Snowshoe Hares.J. Wildl. Diseases 22(3):349-363.

Thompson, Dixon. 1986. *Giardia:* Don't drink the water? Park News. 22(1):27-30.

Todd, A.W., J.R. Gunson and W.M. Samuel. 1981. Sarcoptic mange: an important disease of coyotes and wolves of Alberta, Canada. Proc. Worldwide Furbearer Conf. pp. 706-729.

Birds

Alexander, Stuart E. 1986. Unconfirmed sighting of a Three-toed Woodpecker with a white back instead of the usual "ladder back". Alberta Bird Record 4(2):45.

Anonymous. 1985. Ducks Unlimited (DU) Canada. Trans. Fed.-Prov. Wildl. Conf. 49:248-255.

Armitage, D. 1986. World's largest waterfowl staging resounding recovery. Can. Geogr. 106(3):46-53. - Trumpeter Swan.

Backhouse, F. 1986. Bluebird revival. Can. Geogr. 106(2):32-39.

Bennett, G. 1985. Most wanted birds in review. Birdfinding in Canada 5(3):23-24. - Alta. observations of Sage Grouse & Mountain Plover.

Bennett, G. 1986. Spectacles!!! Birdfinding in Canada 6(1):3-5,23.

Bennett, G. 1986. Winter birding across Canada. Birdfinding in Canada. 6(3):7-14.

Bennett, G. 1986. One more look at 1985. Birdfinding in Canada 6(3):22-23.

Calverley, B. 1986. Artificial nesting structures for waterfowl. Proceedings of the Eighth Annual North American Bluebird Society Conference. Red Deer, Alberta. July 12-13, 1985. pp.3-6.

Collister, Doug. 1986. The 1984 Christmas Bird Count in Alberta. Alberta Bird Record 4(2):48-49.

Collister, Doug. 1986. Winter 1985-highlights. Alberta Bird Record. 4(2):49-60.

Collister, D. and J. MacKay. 1986. Spring arrivals at Millarville, Alberta 1941-1984. Pica 6(3):8-12.

Duncan, D.C. 1986. Influence of vegetation on composition and density of island-nesting ducks. Wildl. Soc. Bull. 14(2):158-160.

Elphinstone, D. 1986. Peregrine watch. Pica 6(3):4-7.

Haig, S.M. and L.W. Oring. 1985. Distribution and status of the Piping Plover throughout the annual cycle. J. Field Ornithol. 56:334-345.

Hinshaw, V.S., J.M. Wood., R.G. Webster, R. Deibel, and B. Turner. 1985. Circulation of influenza viruses and paramyxoviruses in waterfowl originating from two different areas of North America. Bull. World Health Organization. 63(4):711-719.

James, R.D. 1986. Checklist of Canadian birds 1986. Royal Ont. Mus., (Toronto.)

Kerlinger, P. and M.R. Lein. 1986. Differences in winter range among age-sex classes of Snowy Owls *Nyctea scandiaca* in North America. Ornis Scandinavica 17:1-7.

MacIntosh, D. 1986. Canadian nesting box report, 1985. Sixth annual Mountain Bluebird trail report Lethbridge, Alberta. Sialia 8:93-94.

Metras, L. 1985. Status of waterfowl, June 1985. Trans. Fed.-Prov. Wildl. Conf. 49:234-238.

Morck, K. 1986. Violet-green Swallow: A nesting record. Pica 6(3):33-34.

Rogers, T.H. 1985. The winter season. December 1, 1984-February 28, 1985. Northern Rocky Mountain-intermountain region. Amer. Birds 39:189-191.

Salt, J.R. 1985. A note on "condominium" nesting of the Northern Flicker, *Colaptes auratus,* in western Alberta. Can. Field-Naturalist. 99(4):534-535.

Schmutz, J. 1986. Canada, west, Eyas 9(1):17-18.

Schroeder, M.A. 1986. A modified noosing pole for capturing grouse. N.Am. Bird Bander 11(2):42.

Shantz, B. and H. Shantz. (eds). 1986. Proceedings of the Eighth Annual North American Bluebird Society Conference. Red Deer, Alberta. July 12-13, 1985. North American Bluebird Society, Silver Springs, Maryland, and Ellis Bird Farm Ltd., Lacombe, Alberta.

Shantz, B.R. 1984. Ellis Bird Farm Ltd. report, 1983. Sialia 6:93.

Shantz, B.R. 1986. A history of the Ellis Bird Farm. Proceedings of the Eighth Annual North American Bluebird Society Conference. Red Deer, Alberta. July 12-13, 1985. pp. 56-60.

Steeves, John B. 1986. Prairie Falcon attacks Snowy Owl. Alberta Bird Record. 4(2):48.

Stiles, D.J. 1986. Canadian nesting box report, 1985. Calgary area bluebird trails. Sialia 8:93.

Storms, Robert W. 1986. The three newest "splits" that affect Alberta birders. Alberta Bird Record. 4(2):46-47.

Van Wagner, C.E. and A.J. Baker. 1986. Genetic differentiation in populations of Canada Goose. Can. J. Zool. 64:940-947.

Visser, Suzanne. 1986. Observations of the American Crow on the University of Calgary campus, 1984-1985. Pica 6(3):13-23.

Mammals

Festa-Bianchet, M. 1986. Seasonal dispersion of overlapping mountain sheep ewe groups. J. Wildl. Manage. 50(2):325-330.

Festa-Bianchet, Marco and Judith Samson. 1984. Lamb survival in relation to maternal lungworm load in Rocky Mountain Bighorn Sheep. In: Proc. of the

Fourth Biennial Symposium of the Northern Wild Sheep and Goat Council. Manfred Hoefs (ed.) pp.364-371.

Gainer, R. and K. Smith. 1985. Mineralization of subcutaneous tissue in Beaver, *Castor canadensis*. Can. Field-Naturalist. 99(4):535-536.

Jorgenson, Jon T. and W.D. Wishart. 1984. Growth rates of Rocky Mountain Bighorn Sheep on Ram Mountain, Alberta. *In*: Proc. of the Fourth Biennial Symposium of the Northern Wild Sheep and Goat Council. Manfred Hoefs (ed.) pp. 270-284.

Onderka, D.K. and W.D. Wishart. 1984. A major Bighorn Sheep die-off from pneumonia in southern Alberta. *In:* Proc. Fourth Biennial Symposium of the Northern Wild Sheep and Goat Council. Manfred Hoefs (ed.). pp. 356-363.

Pybus, M.J. 1986. Rabies in insectivorous bats of western Canada, 1979 to 1983. J. Wildl. Diseases. 22(3):307-313.

Pybus, M.J., D.P. Hobson and D.K. Onderka. 1986. Mass mortality of bats due to probable blue-green algal toxicity. J. Wildl. Diseases. 22(3):449-450.

Smith, H.C. 1986. Mammals of southeast Alberta. Natural History Occasional Paper No. 7, Provincial Museum of Alberta. 52. pp.

Environmental Education

Clark, J. 1985. Project WILD in Alberta. Can. Wildlife Administration. June 1985:1-2.

Pearman, M.D. 1986. Project Nest Box Alberta & environmental education. Proceedings of the Eighth Annual North American Bluebird Society Conference. Red Deer, Alberta. July 12-13, 1985. pp.36-39.

Shantz, H. 1986. The Nature of Alberta Wildlife Education Program. Proceedings of the Eighth Annual North American Bluebird Society Conference. Red Deer, Alberta. July 12-13, 1985. pp. 61-62.

Development/Environmental Problems

Bailey, E. 1986. Acid rain. Environment Views 8(6):28-31.

Bella, I. E. 1986. Tree growth response along seismic lines in Alberta. For. Chronicle 62(1):29-34.

Ramage, N. 1986. Air quality. Environment Views 8(6):20-23.

Sangster, H. 1986. Waste management. Environment Views 8(6):10-13.

Sniatynski, G. 1986. Sour gas. Environment Views 8(6):24-27.

Parks and Natural Areas

Dearden, P. 1986. Water resources and parks: a Canadian perspective. Park News 22(1):24-26.

Wildlife Management

Anonymous. 1985. Alberta Fish and Wildlife Division. Trans. Fed.-Prov. Wildl. Conf. 49:180-183.

Anonymous. 1986. Prospectus for an Alberta conservation strategy. Public Advisory Committee to the Environment Council of Alberta, Edmonton. ix + 78 pp.

Bailey, E. 1986. Wildlife. Environment Views 8(6):14-19.

Bjorge, Ronald R. and John R. Gunson. 1985. Evaluation of wolf control to reduce cattle predation in Alberta. J. Range Manage. 38(6):483-487.

Keith, J.A. 1985. Committee on the Status of Endangered Wildlife in Canada (COSEWIC). Trans. Fed.-Prov. Wildl. Conf. 49:231-233.

Keith, J.A. and D. Muir. 1985. 1985 classification actions by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC). Can. Field-Nat. 99:549.

Todd. A.W. 1981. Socioeconomic characteristics of registered trappers in Alberta, Canada. Worldwide Furbearer Conf. Proc. p. 2037-2056.

California Gulls. Note the dark eyes, a good field mark that distinguishes them from Herring Gulls.

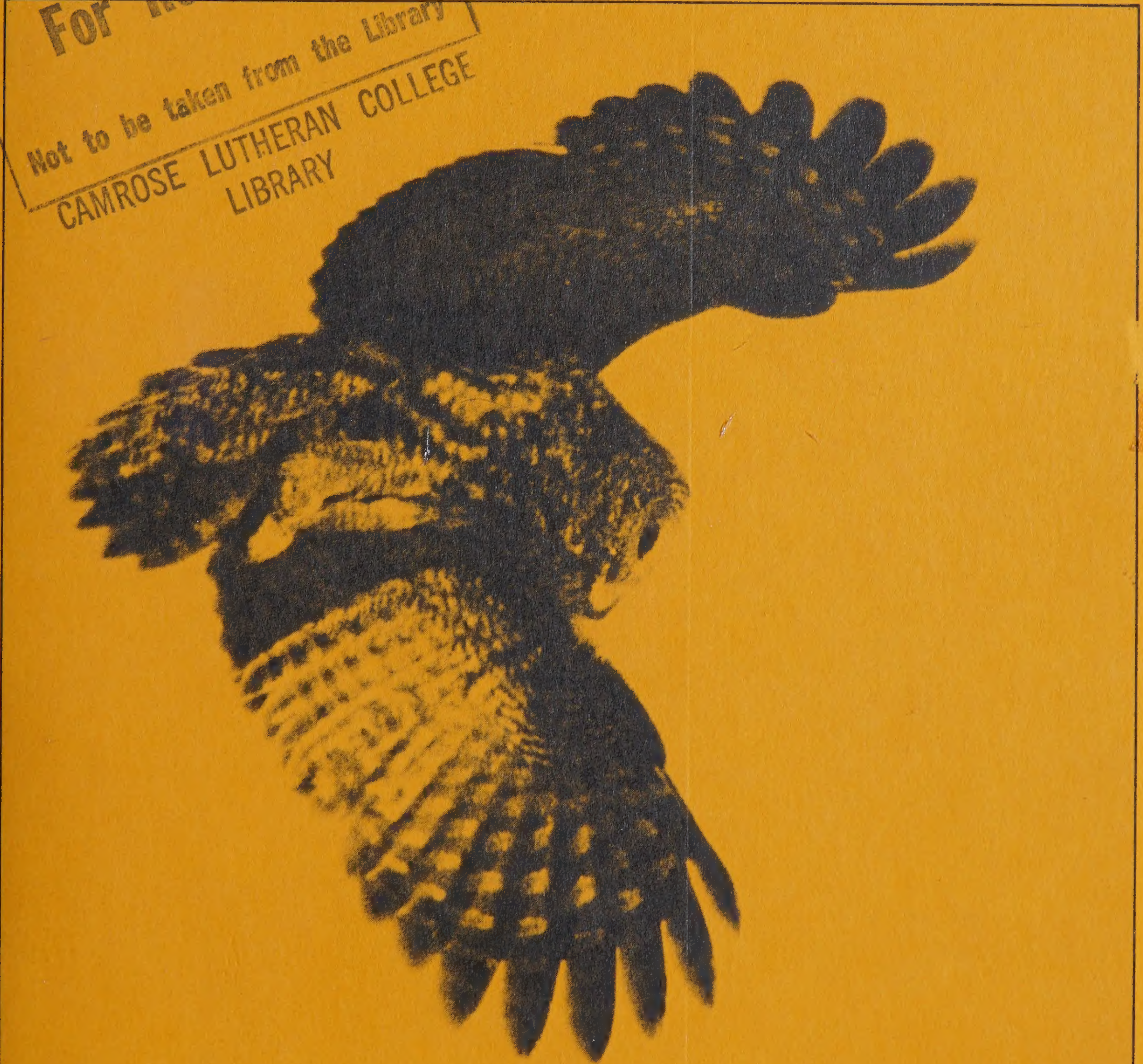
Photo: Edgar T. Jones

JAN 6 1987

ALBERTA NATURALIST

Volume 16, Number 4, Winter 1986.

For Reference
Not to be taken from the Library
CAMROSE LUTHERAN COLLEGE
LIBRARY



A dozen Great Gray Owls were seen during the 1985 Christmas Bird Count. See article pages 126-134.

Photo: Jim R. Salt

ALBERTA NATURALIST
Volume 16, Number 4, December 1986.
Published quarterly by the Federation of Alberta Naturalists
Box 1472, Edmonton, Alberta T5J 2N5

CONTENTS

Vascular Flora of the Brown-Lowery Recreation Area, Alberta. *Olga Droppo and Harold Pinel* 105

The Wild West Program. Notes from a Talk by *Miles Scott-Brown* 111

The Kitsim Project. *Kim Schmitt and Bill Shanks* 114

The Proposed Wolf Kill in Willmore Park. *Dick Dekker* 116

FAN News, Club News, Notes and News 119

Alberta Christmas Bird Counts, 1985. *Andrew Slater* 126

Observations of Two Cougars in Waterton Lakes National Park. *Keith McDougall* 134

Mallard Attacks Ring-billed Gull. *Richard Carmel* 135

First Authenticated Record of a Common Poorwill in the Calgary Area. *Harold W. Pinel and John R. Riddell* 135

Age-specific Mortality Associated with Native Hunting of Bison. *Bob Gainer* 136

Naturalists' Bookshelf

Red Fox: The Catlike Canine. *Dick Dekker* 137

The Status of Ecological Reserves in Canada. *Peter Lee* 138

Recent Publications on the Natural History of Alberta 139

The Alberta Naturalist is published quarterly by the Federation of Alberta Naturalists. Special issues may be published from time to time. Any material printed for the first time in the AN may be reproduced without permission; credit lines will be appreciated. All opinions expressed are those of the authors concerned and, except where stated, do not represent official F.A.N. policy.

ADVICE TO CONTRIBUTORS

Items for publication should be addressed to the Editor at the address below. Deadlines for submission of material for regular issues are: January 1, April 1, July 1, and October 1. All material submitted for publication must be typed, double-spaced, preferably on 8½"x11" paper. Maps, charts, and graphs should be submitted in "camera-ready" form if possible. Photographs accompanying an article should be submitted in the form of black and white prints on glossy paper. (Prints can be made from supplied colour slides or negatives if necessary.) Illustrative material will be returned on request. The author's name and a complete mailing address must be provided with the submission of material. Contributors should be aware that articles of a technical nature and those involving the sightings of rare species, range extensions, out of season records, etc. may be sent out for peer review. A complimentary copy of the issue in which a submission appears will be sent to authors. Information on advertising rates may be obtained from the Editor at the FAN Box No.

DEADLINES for FAN project reports are: *Alberta Christmas Bird Counts,* January 30, Andrew Slater, 152 Oakside Circle S.W., Calgary, Alberta T2V 4H2.; *May Species Count - Plants,* July 15, J. Derek Johnson, Northern Forestry Centre, 5320 - 122 St., Edmonton, AB. T6H 3S5; *May Species Count - Birds and Mammals,* July 15, Al Wiseley, 202 - 635 - 56 Ave. S.W., Calgary, AB. T2V 0G9. Compiler cooperation is greatly appreciated.

Editor: Derek Johnson,
7109 - 106 St., Edmonton, Alberta T6E 4V5.
Telephones: 436-8231 home, 435-7306 work.
Assistant Editors: Dick Dekker, David M. Ealey

Typesetting: Typeplus Typographers Ltd.
Graphic Design and assembly: Dick Dekker
Printing: Europe Offset Ltd.

The costs of printing the Alberta Naturalist are partially supported by grant funds through the Periodical Publication Assistance program of Alberta Culture. The Federation of Alberta Naturalists gratefully acknowledges this support.

ISSN 0318-5440. Postage paid at Edmonton, Alberta under Second Class Mail Registration No. 3604.

Vascular Flora of the Brown-Lowery Provincial Recreation Area, Alberta

Olga Droppo[1] **and Harold Pinel**[2]

Brown-Lowery Provincial Recreation Area is located 50 km southwest of Calgary. It covers an area of 278 ha encompassing 25-21-4-W5 and a small portion of SW ¼36-21-4-W5. (See Map 1.) There is a small parking lot in the northwest corner of the area. Adjacent to the parking lot, there are pit toilets and picnic tables.

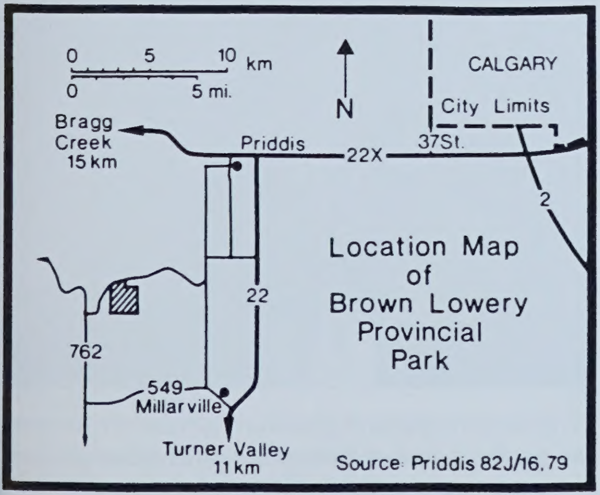
The authors decided to catalogue the vascular plants of Brown-Lowery because the area lies at the southern limits of the Boreal Foothills Ecoregion in Alberta and because there is little information on the area. The field work was done between May and October, 1985, with scattered visits to the area in previous years. Bird and McKay (1972) provided a starting point with a preliminary checklist.

History and Human Impact

The Canadian Pacific Railway Company acquired Section 25 as part of a land grant from the Canadian Government in 1871. The first titles to the land were issued to the C.P.R. in 1904 for the east half-section and in 1909 for the west half-section.

It is estimated that over 60% of the Area has been modified or disturbed (Mueller 1971). The initial use of the land was for lumbering. Charles Edgar Billings operated a sawmill in the northeast corner of the section from 1896 to 1907 when he sold it to Vernon Nathan de Mille who continued to cut on leases until 1915. Flat-topped stumps can be seen scattered throughout the woods. At its peak the mill-site included a planing mill, a blacksmith shop, a machine shop, a main house (later burnt down), two smaller frame houses, a bunk house, a small railway system, a barn and two corrals for cattle, a hen coop and some cultivated land. Remains of decaying buildings can still be found in the Old Mill Clearing.

Map 1



Source: Priddis 82J/16.79

Home Oil Company acquired the section in 1943 and in 1969 donated it to the Government of Alberta on condition that it "be retained as near as practical in the present condition and to be known as the Brown-Lowery Natural Area." The area was named in memory of Robert Brown Sr., founder of Federated Petroleums Limited, and James Robert Lowery, founder of Home Oil Company Limited. These two companies merged in 1955 to form the present Home Oil Company Limited. The south boundary of the section lies less than 1.5 km north of Home Millarville #20, the most northerly producing oilwell in the Turner Valley field. Home Oil commissioned a seismic survey for the section in 1952 for oil and in 1957 for gas.

The land was grazed intermittently until 1953 when it was leased and grazed yearly until the Park was formed. Two power lines have been put through the area - the first in 1969 and the second in 1984. The first right-of-way, near the parking lot, was slashed in 1984.

In 1974 the piece of land between section 25 and the existing road, part of the southwest quarter of section 36, was transferred by the Crown and included in the Park to allow easy access. A small parking lot and a picnic area are located on this piece of land. A system of hiking trails has been laid out. Signage is sparse and in a state of disrepair. An old logging road and cutlines make up part of the trails. Wherever necessary, bridges have been built.

The Provincial Parks Act (1972) under the jurisdiction of the Minister of Parks and Recreation, only recognizes, without definition, two kinds of 'parks', Provincial Parks and Provincial Recreation Areas. On November 5, 1985, an Order in Council was passed making the Park "Brown-Lowery Provincial Recreation Area." No changes are planned for the Area at this time. It is the intention of the Parks and Recreation Department of the Province of Alberta to retain the Area in its natural condition as a low-key recreation area.

Geology and Physiography

The study area is situated entirely on the bedded sandstone of the Belly River Formation of the Upper Cretaceous Age. Three faults run northwest to southeast through the Area, the centre one being named the Outwest Fault. Their effect is visible by the three resulting parallel ridges formed by their upthrust. Sandstone outcrops are small, but easily seen in the open areas on the west-facing slope of the easternmost ridge.

The Upper Alberta Formation, also of Upper Cretaceous Age, of shale and sandy shale is below the Belly Formation in uplifted thrusts. This is the formation which contains the Turner Valley Oil Field. Seismic exploration performed in the Area determined that the oil-bearing layers plunged down and hold only saltwater at this point (Mueller 1971).

The surficial geology of the Area consists almost entirely of colluvium, soil and rock creep material overlying bedrock. Its composition of weathered sandstone is unconsolidated but layered parallel to the slope of the ridges. The morphology of the Area reflects the underlying bedrock and the local relief is generally less than one meter. The exception is an area of hummocky moraines with slightly leached till, likely dating to the late Wisconsin Age. These moraines are located in the small gently sloping valley to the east of the parking lot. The till is composed of unsorted gravel and silty sand. Two erratics, 1 to 1.5 m across, are visible adjacent to the northernmost moraine. The topography is hummocky with a local relief of 3 m.

Brown-Lowery Provincial Recreation Area is characterized by gently dissected, hilly relief. Three ridges, consisting of westward dipping fault blocks, run in a northwest to southeast direction. Their slopes vary from gently rolling (7%) to steep (30%). Elevations in the study area range from 1288 m in the north hummocky moraine area to 1440 m in the southeast.

Three permanent streams that are tributaries of Pothole Creek drain the Area. They vary from 0.75 to 1.5 m in width and between 5 and 50 cm in depth. More than five cold water springs con-

*Woodland Horsetail (*Equisetum sylvaticum*) is near the southern limit of its distribution in Alberta in the Brown-Lowery area.* Photo: J.D. Johnson tinuously feed the streams. Small seasonally intermittent streams form branches to the permanent streams. Flow increases dramatically in the spring months with runoff from the surrounding hills. Small "bogs" are located in low-lying areas south of the Old Mill Clearing and in the north-south valley nearest the west boundary.

Soil

Soil development within Brown-Lowery is a product of the weathering of the local parent material, the vegetation, climate, topography, and time. The components have had to interact. Located on unconsolidated, weathered sandstone, soil has been developing since the last ice covering of the Wisconsin Age. The Area's hilly relief produces local climate variations within the area; temperature changes with elevation, available moisture with the position on the slope, and the amount of solar radiation with a site's aspect. Together with the diverse Boreal transition vegetation, they have produced eight distinct soil subgroups (M.L. Droppo 1985). Much of the Area is covered by Brunisolic soils, characterized by their limited development due to the overall cool climate of the region. Within the Aspen and disturbed grass areas, where a thick organic layer can accumulate, richer fertile Chernozems can be found. On gentle, leached sidehills, where clay has developed and accumulated, Luvisols are present. Gleysolic soils distinguished by small rust-coloured mottles, are found within the seasonally wet draws and "bogs".

Climate

Components of the Boreal and Cordilleran climates interact to form the regional climate. The climate is Boreal; summer is the wettest season with maximum precipitation during July. The Cordilleran influence is expressed by increased winter temperatures and precipitation. The mid-Alberta storm track and precipitation caused by upslope conditions are important to the formation of the climate in the study area (Strong and Leggat 1981). Specific climatic data from Brown-Lowery Recreation Area is listed in Table 1. Solar radiation, temperature and moisture conditions vary locally within the study area depending on slope angle, aspect, and elevation.

Table 1. Climatic Data (Mueller 1971)

Mean Temperatures -	January	-12 °C
	April	2 °C
	July	13 °C
	October	4 °C
Mean Annual Snowfall		152 cm
Mean Annual Precipitation		51 cm
Frost Free Days		75-90
Chinook Days*		20

* Strong west wind required with the temperature 4 °C or higher during the period of December to February.

Vegetation

Brown-Lowery Recreation Area is located in the most arboreally diverse ecoregion in Alberta, the Boreal Foothills Ecoregion (Strong and Leggat 1981). The major tree species are Trembling Aspen *(Populus tremuloides)*[1], Balsam Poplar *(Populus balsamifera)*, White Spruce *(Picea glauca)*, and Lodgepole Pine *(Pinus contorta)*. In the study area, these trees occur in pure stands and mixed stands, the latter being more prevalent. Map 2 outlines the vegetational types.

Native grasslands dominated by *Agropyron trachycaulum* and *Stipa columbiana* occur on south and west exposures on the higher parts of the ridges. These pockets of grasslands add considerable diversity to the flora of the Area. Thirty-two species of plants found in the area occur only in the native grasslands. Common flowering plants in the grasslands include - *Zigadenus elegans, Anemone multifida, Heuchera richardsonii, Amelanchier alnifolia, Geum triflorum, Potentilla arguta, Lupinus sericeus, Oxytropis sericea, Linum lewisii,* and *Dodecatheon conjugens.*

Aspen woods occur in scattered localities within the Area. (See Map 2.) Commonly associated species include - *Carex aurea, Disporum trachycarpum, Smilacina racemosa, Smilacina stellata, Zigadenus elegans, Delphinium glaucum, Thalictrum venulosum, Rosa acicularis, Astragalus americanus, Vicia americana,* and *Geranium richardsonii.*

Mixed woods are the dominant vegetation type in the study area. Trembling Aspen and White Spruce are the dominant trees of the mixed woods, but scattered trees of Balsam Poplar and Lodgepole Pine add diversity to the mixture. The mixture of these species is highly dependent upon geographical location, site conditions, and recent history. At Brown-Lowery Recreation Area, the mixed woods vary from those dominated by Aspen to those dominated by White Spruce. The occurrence of Lodgepole Pine within the Aspen stands may be partly explained by the cooler, moister summer and warmer winter climate found in the area (Strong and Leggat 1981). Common species in the understory vegetation include - *Thalictrum venulosum, Fragaria virginiana, Astragalus americanus, Osmorhiza depauperata, Cornus canadensis, Epilobium angustifolium, Arnica cordifolia,* and *Aster conspicuus.*

---

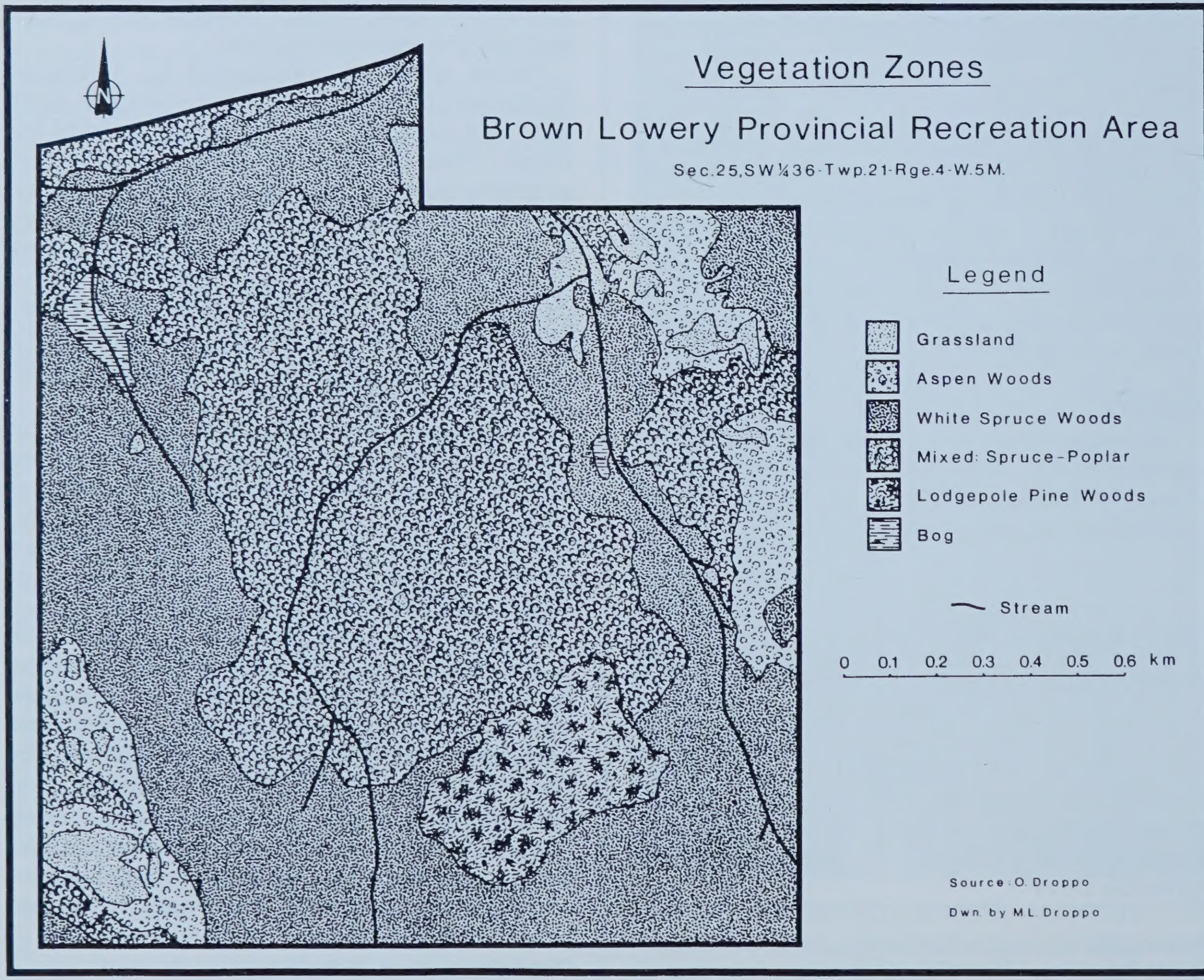
[1] *Nomenclature follows Moss (1983).*

There are areas of White Spruce woods within the Park. Map 2 illustrates where they can be found. In general, they prefer the steeper east- and north-facing slopes. Common species in the understory vegetation include - *Pyrola chlorantha, Equisetum arvense, Calypso bulbosa, Geocaulon lividum, Mitella nuda, Rubus pubescens, Cornus canadensis, Orthilia secunda,* and *Linnaea borealis.*

A small area dominated by Lodgepole Pine occurs on a hill in the south-central part of the Area. The site conditions are very dry resulting in poor vegetation growth. Some of the plants observed in the pine woods include - *Pyrola asarifolia, Arctostaphylos uva-ursi, Vaccinium caespitosum,* and *Linnaea borealis.*

A variety of aquatic habitats occur in the study area including cold water springs, "boggy" areas and stream channels. Some occur within forests; others occur in open areas. These wet environments add considerable floral diversity to the Area. In the moist springy areas common plants include species of *Carex, Veronica americana, Epilobium ciliatum, Ranunculus sceleratus, Valeriana dioica,* and *Petasites palmatus.* The "boggy" areas are dominated by *Betula glandulosa* and an almost continuous cover of *Carex rostrata.* This is the only habitat where *Polemonium acutiflorum* was found. The vegetation found along stream channels varied depending on whether the

Map 2


N
Vegetation Zones
Brown Lowery Provincial Recreation Area
Sec.25,SW¼36-Twp.21-Rge.4-W.5M.
Legend
Grassland
Aspen Woods
White Spruce Woods
Mixed: Spruce-Poplar
Lodgepole Pine Woods
Bog
Stream
0 0.1 0.2 0.3 0.4 0.5 0.6 km
Source: O. Droppo
Dwn. by ML Droppo

stream was in forest or an open area. In the open marshy areas along the stream channels species such as *Scirpus microcarpus, Mentha arvensis, Epilobium ciliatum,* and *Juncus balticus* can be found. Along the streams in dense mixed woods *Equisetum arvense, Chrysosplenium iowense, Cystopteris fragilis,* and mosses are common. Thirty-four plant species found in the Area were restricted to aquatic habitats.

Floral diversity in the Area is also increased by disturbed areas. Thirty-seven species were found only in disturbed areas. These areas include the Old Mill Clearing, the parking lot, the cutlines, and trails. Plants associated with disturbed areas include - *Taraxacum officinale, Hordeum jubatum, Bromus inermis, Phleum pratense, Urtica dioica, Galeopsis tetrahit, Thlaspi arvense, Trifolium hybridum,* and *Collomia linearis.*

Discussion of Flora

The authors recorded 266 vascular plant taxa in 50 families from the study area. Some of the plants were very specific to a particular habitat; others occurred in a variety of habitats. The greatest species diversity was observed in mixed woods followed by aspen woods, native grasslands, disturbed areas, aquatic habitats, spruce woods, and finally pine woods. If one looks at the taxa restricted to only one habitat the three most important habitats adding to the floral diversity were disturbed areas with 37 taxa, aquatic habitats with 34 taxa, and grasslands with 32 taxa.

Ten species of plants found in Brown-Lowery Provincial Recreation Area were outside of their known range in Alberta as depicted in Flora of Alberta (1983). Findings of *Silene parryi* and *Myosotis alpestris* extended slightly their eastern range in Alberta. The finding of *Equisetum sylvaticum, Chrysosplenium iowense, Goodyera repens, Geocaulon lividum, Anemone riparia, Ribes triste, Polemonium acutiflorum,* and *Aster x maccallae* extended their previous known ranges slightly to the south. These southward extensions to plant species distribution were predictable because the study area is at the southern end of the Boreal Foothills Ecoregion. Except for disjunct Waterton Park and/or Cypress Hills records, the following plant species are at or near the southern limit of their known ranges; *Luzula multiflora, Habenaria obtusata, Orchis rotundifolia, Betula pumila, Ribes hudsonianum, Rubus arcticus,* and *Aster borealis.*

Besides the above extralimital species, a

*Grass-of-Parnassus (*Parnassia palustris*) is found occasionally in wet areas and along streams.*

number of plants were at the edge of their known ranges in Alberta. Species at the southern limits of their known distribution include *Carex vaginata* and *Petasites palmatus.* At the western limits of their known range in southern Alberta are *Catabrosa aquatica, Monarda fistulosa, Castilleja lutescens, Aster ericoides, Aster hesperius,* and *Lactuca pulchella.* Excluding the Cypress Hills, a number of Cordilleran species approach their eastern range limits in Alberta in the study area. They include *Calamagrostis purpurascens, Calamagrostis rubescens, Poa nervosa, Stenanthium occidentale, Rumex acetosa, Ranunculus inamoenus, Draba aurea, Spiraea betulifolia, Pyrola minor, Pedicularis bracteosa, Anaphalis margaritacea, Aster subspicatus,* and *Solidago multiradiatra.*

Acknowledgements

Our sincere appreciation is extended to Michael L. Droppo for preparation of the maps, and to Mary J. Davies and J. Derek Johnson for identifying certain specimens of *Poa* and *Carex.*

Literature Cited

Bird, C.D. and W.G. McKay. 1972. Check-List of the Plants and Animals of the Brown-Lowery Natural Area, mimeo, 6pp.

Droppo, M.L. 1985. Soil Analysis of Vegetational Landtypes within Brown-Lowery Provincial Park, unpublished manuscript, 52 pp.

Moss, E.H. 1983. *Flora of Alberta.* Second Edition. Revised by John G. Packer. Univ. of Toronto Press, Toronto, Ont. 667 pp.

Mueller, U. 1971. Natural History Inventory Sheet for Brown-Lowery Natural Area. Alberta Energy and Natural Resources, 5 pp.

Strong W.L. and K.R. Leggat. 1981. Ecoregions of Alberta. Alberta Energy and Natural Resources, Edmonton, 64 pp.

Authors' Addresses:

1. 54 Malibou Road S.W., Calgary, Alberta T2V 1W8
2. 1017-19 Ave. N.W., Calgary, Alberta T2M 0Z8

*Red and White Baneberry (*Actaea rubra*) occurs occasionally in mixed woods and spruce woods. The red-fruited form predominates. A complete listing of the vascular plants of the Area is available from the Editor on request.*

Photo: J.D. Johnson

The Wild West Program

Notes for a Talk to the Federation of Alberta Naturalists' Fall Meeting, Brooks, Alberta, 13 September 1986 by Miles Scott-Brown, World Wildlife Fund Canada.

I want to thank the Federation of Alberta Naturalists for inviting me to speak today on behalf of World Wildlife Fund. We have recently initiated our Wild West Program and I would like to spend the majority of my talk informing you about Wild West and what we hope to do on the prairie over the next three years.

The only audio visual aid I have with me tonight is your imagination. So to begin, I want you to close your eyes for a moment and imagine what the prairies were like at the time of David Thompson, nearly two hundred years ago. Imagine a prairie landscape without fences, without grain elevators and tractors, a huge expanse of grassland unmarked by roads and section lines. A landscape supporting a faunal assemblage, that in biomass alone, perhaps will be unmatched again in the history of this planet. Imagine herds of plains bison so numerous their movements darkened the prairie sky with dust. Imagine seeing thousands of Pronghorn Antelope wheeling in formation across the prairie landscape. In the distance, you can make out a bull elk protecting his harem from wouldbe intruders.

Look closer and you see several large carnivores, the Plains Wolf and Grizzly Bear stalking their ungulate prey. In the evening you watch a family of Swift Foxes tugging on what remains of a bison kill. On the horizon you make out a Black-tailed Prairie Dog colony and follow the antics of Black-footed Ferrets as they dance around their burrows.

Early next morning you come across a prairie slough teeming with waterfowl and shorebirds. You see hundreds of Trumpeter Swan and White Pelican pairs and watch several large flocks of Whooping Cranes calling to each other in the still morning air. You marvel at the diversity of prairie bird life and in your notebook at the end of the day you remark that the Greater Prairie Chicken, Piping Plover, Burrowing Owl and Ferruginous Hawks were too numerous to record.

Yet in just over one lifetime, this multitude of wildlife was reduced to a shadow of its former abundance. In Canada, by the turn of this century, the Passenger Pigeon, Eskimo Curlew and Prairie Grizzly were gone. All that remained of the Plains Bison were several captive herds. The Trumpeter Swan was hunted close to extinction and the Plains Wolf was close to being poisoned and trapped out of existence. The Swift Fox, Black-footed Ferret and Prairie Chicken were soon to follow on the road to extinction. Today over one half of the birds and mammals listed as being rare, endangered or threatened in Canada are found in the prairie provinces.

It was not agriculture that was responsible for this needless slaughter. Rather, it was the guns of market hunters, the poison baits of professional trappers and a lack of protective wildlife legislation. Once the plains had been cleared of bison, antelope, bear and wolf, ranchers and farmers came with fence and plow. The skulls and bones of millions of animals lay waiting to greet them.

For once the animals were removed, it was agriculture that markedly altered prairie habitats. As of 1982, two hundred years after Thompson and nearly one hundred years after the last buffalo was shot in Canada, most of the prairie is under intensive cultivation. Four fifths of the shortgrass prairie, and three quarters of the mixed grass prairie lie under the plow. Less than twenty percent of the tall grass prairie remains.

Yet all is not without hope. Witness the success we have had returning the Pronghorn Antelope, and rescuing the bison and Whooping Crane from the brink of extinction. With our human ingenuity we have learned how to save species through our technology - embryo transplants, artificial insemination, foster parents, and captive breeding programs. But we have not yet learned how to stop the relentless loss of natural habitat on the prairie. Will there be a home for these captive-born and raised animals to live in?

It was the global loss of habitat that prompted the World Wildlife Fund to sponsor the development of the World Conservation Strategy in 1980. The goal of this document is to outline means to ensure the long-term capacity of this planet to sustain development and support all life. The World Conservation Strategy specifically identified the Canadian prairies as a region of international significance deserving priority conservation action.

With this in mind, Monte Hummel, president of World Wildlife Fund Canada officially kicked off

"Wild West" in April of this year. This marked the beginning of a three-year program aimed at preserving endangered species on the Canadian prairie. Wild West is the third major regional conservation program of WWF Canada which focuses on wildlife habitats of national significance. To date, we have raised 60% of our needed funding through the sponsorship of Canadian National Sportsmens Shows and ESSO Resources Limited. We are still hoping to secure the remaining 30% from western sources.

Wild West is truly a western effort. Our twelve man steering committee is composed of westerners from Alberta, Saskatchewan and Manitoba. It is made up of government biologists, university professors, farmers, ranchers and representatives of private conservation groups. Our office for Wild West is located in Calgary and the program is directly administered from the West.

The objectives of Wild West follow the three major objectives outlined in our 1980 World Conservation Strategy. I will briefly summarize these for you:

1. To maintain essential ecological processes and ecological support systems;
2. To preserve genetic diversity;
3. To ensure the sustainable use of natural resources.

Based on the above objectives we devised three major directions of Wild West:

The first is to draft a plan for the conservation of prairie endangered species and their habitats.

The second is to mount a number of demonstration projects directed towards the recovery of endangered species which emphasize cooperation with other agencies and private landowners.

The third, and perhaps the most important, is to use both the strategy and our demonstration projects to create public awareness of what can be done to conserve prairie wildlife and their habitats.

Let me talk first about the prairie action plan. We are well underway with this project and hope to have a prospectus out for review by the new year. In it, we will identify what natural areas remain in prairie Canada and what should be done to preserve them. We will also prepare an inventory of rare, threatened and endangered species, identify data gaps where present and make recommendations for recovery plans. I should point out that the federal and provincial authorities responsible for the drafting of prairie species recovery plans are on our action plan committee. In short, we are preparing a blueprint of how and where we will act over the next three years.

That time frame is important. Our goal is to act as a catalyst, to get agencies talking together, to inform the public, to provide a spark to get things rolling to ensure sustained use on a long-term basis. There are many local conservation groups already active on the prairie, doing much needed work on behalf of many wildlife species. We at WWF wish to act in concert with these groups, to provide a national voice if needed, and to ensure that these programs continue long after Wild West is completed.

I'd like to talk next about our demonstration projects for these are our highest priority. In 1986, we initiated six new projects covering a wide variety of endangered, threatened or rare prairie species. We have sponsored projects to look at the status of Piping Plovers in Alberta and Manitoba, to produce a prairie recovery plan for the Burrowing Owl, to determine the status of reptiles and amphibians in prairie Canada and to examine how tall grass prairie could be re-established in Manitoba. We have continued to sponsor the reintroduction of the Swift Fox, through a generous donation from ESSO Resources Canada. And we have undertaken a feasibility study for the reintroduction of the Trumpeter Swan to prairie Canada.

These six projects join ten others already underway involving a total of 41 cooperating agencies across the prairie. And we are about to begin discussion of a much expanded funding program for projects in 1987.

With regard to increasing public awareness of Wild West, we have begun a series of television "commercials" to make westerners aware of the problems facing prairie wildliife and their habitats. The initial commercial will be aired some time in January and will form the first contact with the public of what Wild West is all about.

In addition, we hope to have H.R.H. Prince Phillip, the president of World Wildlife Fund, visit several of our prairie demonstration projects next summer.

As I mentioned earlier, we will be distributing the prospectus for our prairie action plan some time in the new year. The detailed prospectus will be sent to governments, universities and conservation organizations, but we will also be distributing on a wide scale a pamphlet to the public.

And we hope to extend our "Operation Lifeline" program to prairie school teachers, so that children can be educated about the problems facing endangered species in the west. Education is the key towards changing attitudes and increasing public awareness of the immense treasures we have in the West.

Next the farmers. Although things look bleak here in the West with depressed grain and oil prices, we realize that the heart and soul of Wild West lies in garnering the support of prairie landowners in conservation efforts. We have started what we hope could be a trend across the prairies in the years to come; that is involving private landowners in wildlife and habitat projects. For example, we have secured a three-year lease of a 52.4 ha pasture in southern Saskatchewan to protect 10 pairs of nesting Burrowing Owls. Without the help of private landowners in these projects, critical habitats for endangered species could be lost forever.

We hope to secure additional agreements with perhaps up to 250 other landowners over the next three years.

Our main goal is increasing awareness. What we need most on the prairies are incentives both on private and crown land that favor the retention of wildlife habitat and the preservation of prairie species. We are working to develop a list of incentives similar to what we have done for our Carolinian Canada program in Ontario. What we need in the West in a more favorable attitude towards incorporating the importance of wildlife in agricultural production. We are working with government agencies and perhaps can help implement similar legislation as the U.S. farm bill. We are working with conservation groups such as Habitat Canada and Ducks Unlimited to promote their habitat acquisition and agricultural extension programs. And we are working with many conservation groups across the prairie to help increase public awareness of the need for wildlife in everyday life here in the West. Together, hopefully we can plant the seeds of change over the next three years.

We may be new on the prairie, but we are well underway in our efforts. I am overwhelmed by the level of cooperation we have received from provincial and federal wildlife agencies, from conservation groups and local landowners. The next step is public involvement. With the help of groups such as FAN, we need to reach out for the public, get them involved either financially or as volunteers in projects. Although eighty percent of Canadians have stated that wildlife is important to their lives, very few are actively involved in or support conservation organizations.

And we have to change attitudes! Too often in the West, I am reminded just how boring the drive

Prairie wetlands are urgently in need of protection from drainage schemes. One of many pothole-nesting species to benefit would be the Blue-winged Teal. Photo: Tom Branch east to Winnipeg is, or hearing comments such as "I never realized that prairie wildlife was in trouble." Clearly, the public must be made aware of the treasures we hold here in the back yards of the Canadian prairie. Increasing awareness should be our long term goal. In an increasingly urbanized society we have to be reminded of the importance of wildlife, not just in economic terms, but in its great aesthetic and spiritual value.

We will never be able to bring back the prairie to the full extent of the past. We will never again see the Plains Wolf, the Prairie Grizzly and Bison as they were. The times they have changed. The writings and impressions of early explorers and the memories of our grandfathers conjure up visions of paradise to us, but the realities of today reside in our memories to be passed on to our grandchildren. We are still blessed with a multitude of wildlife here in western Canada. Let's continue to work together to leave some wild in the West.

Wild West Steering Committee Members

Miles Scott-Brown
Executive Coordinator, Wild West, World Wildlife Fund Canada, #204-1422 Kensington Road N.W., Calgary, Alberta T2N 3P9.

Dr.Geoff Holroyd
Canadian Wildlife Service, Twin Atria Building, 2nd Floor, 4999-98 Ave. Edmonton, Alberta T6B 2X3

Mr. Norbert Kondla
Alberta Energy and Natural Resources, Sun Centre Building, 530-8th Street S., Lethbridge, Alberta T1J 2J8

Mr. Dale Hjertaas
Wildlife Branch, Sask. Dept. of Renewable Resources, 3211 Albert Street, Regina, Saskatchewan S4S 5W6

Hon. J.W. Grant McEwan
132 Hallbrook Dr. S.W., Calgary, Alberta T2V 3H6

Mr. Charles Phelps
R.R. #1, Prince Albert, Sask. S6V 5P8

Dr. J.S. Rowe
18 Kirk Street, Saskatoon, Sask. S7H 302

Mr. Lorne Scott
P.O. Box 995, Indian Head, Sask. S0G 2K0

Dr. Merlin Shoesmith
Wildlife Branch, Man. Dept. Nat. Res., P.O. Box 14, 1495 St. James St., Winnipeg, Manitoba R3H 0W9

Mr. Bob Sopuck
General Delivery, Lake Audy, Manitoba R0J 0Z0

Mr. Ken Cox
Wildlife Habitat Canada, 1704 Carling Avenue, Suite 301, Ottawa, Ontario K2A 1C7

Mr. Monte Hummel
President, World Wildlife Fund Canada, 60 St. Clair Avenue East, Ste. 201, Toronto, Ontario M4T 1N5

Dr. Steve Herrero
Faculty of Environmental Design, University of Calgary, 2500 University Drive N.W., Calgary, Alberta T2N 1N4

Dr. Sandy McAuley
Ducks Unlimited, 1190 Waverly Street, Winnipeg, Manitoba R3T 2E2

Mr. Elmer Kure
P.O. Box 2100, Innisfail, Alberta T0M 1A0

The Kitsim Project:

A case study illustrating the integration of wildlife management and range management

Kim Schmitt[1] and Bill Shanks[2]

Landuse practices such as wetland drainage and intensive cultivation are having a negative impact on wildlife resources. Similarly, expansion of cultivated land is decreasing the availability of rangeland for cattle production. As a result, both wildlife managers and range managers are searching for opportunities aimed at maximizing returns. A key component related to maximizing returns is the development and application of sound, ecologically-based management principles.

The objective of this paper is to describe an integrated range-wildlife management incentive that has recently been undertaken by the Eastern Irrigation District and Ducks Unlimited Canada.

The project is called "Kitsim", and is located approximately 12 km southwest of Brooks.The project site, owned by the Eastern Irrigation District, encompasses approximately 52 km² of rangeland. Approximately 86% remains as native shortgrass prairie, while the remaining portion has been seeded to a tame grass mixture of Crested Wheat Grass *(Agropyron pectiniforme),* and Russian Wild Rye *(Elymus junceus).*

The basic goals of the Kitsim Project are twofold: 1) create waterfowl breeding habitat, and 2) enhance range resources.

The Kitsim Project involves the addition of an irrigation water supply to 69 basins totalling approximately 485 ha throughout a 52 km² track of rangeland. Prior to development, the majority of the basins existed in the form of eroded solonetzic blowouts. The solonetzic pans typically supported disturbance-type vegetation species such as Foxtail Barley *(Hordeum jubatum),* Povertyweed *(Iva axillaris),* Gumweed *(Grindelia squarrosa),* etc. In addition, sparse stands of Western Wheat Grass *(Agropyron smithii),* and Creeping Spike Rush *(Eleocharis palustris)* were common on some basins. In general, these basins provided both poor forage value and waterfowl production potential.

Project management is facilitated by an intricate series of conveyance canals, control structures, and drainage ditches. During the first three years of operation (1982-1985), management of the wetland basins has been directed at establishment of vegetation communities that provide benefits for both waterfowl and cattle production. Of particular interest are seasonal wetland species such as sedges *(Carex sp.),* and rushes *(Eleocharis sp.).* Other plant species of particular interest include flood/drought resistant grasses such as Western Wheat Grass, as well as submerged and emergent plant species. Seasonal wetland plant species such as spike rush are especially suited to the harsh, low nutrient conditions of the solonetzic pans due to their ability to utilize nutrients carried with irrigation water.

Scheduling of flood periods and subsequent dry periods has been directed at coordinating the maintenance of the seasonal plant community's health and vigour with breeding waterfowl habitat requirements.

Monitoring and experimental research is being utilized to develop a better understanding of the effects of flood period/dry period combinations on vegetation density and biomass.

In addition, cattle utilization, waterfowl production, soil salinity, vegetation nutrient content, vegetation species composition, and biomass change, in and adjacent to managed wetland basins, is being monitored.

To date, results of monitoring and research have been encouraging. Total vegetative biomass measured in early July (peak biomass) on managed sample basins increased by an average of 260%, after one year of irrigation. In contrast, biomass of vegetation on two non-managed basins decreased during the same period.

Cattle utilization of forage has been extensive. Nutrient content of dominant plant species, such as spike rush, compared favourably with upland species as reported by Clarke and Tisdale (1945).

Waterfowl production has been increasing each year and is expected to be comparable to other prairie wetland habitat.

In addition to converting non-productive rangeland into valuable forage producing areas, the project has provided for a more even distribution of stockwater throughout the 52 km^2 range. This has resulted in more uniform grazing, a fundamental range management goal.

In summary, early results suggest we have successfully integrated wildlife habitat and range resource enhancement. The challenge that now presents itself is to expand our understanding of the many interacting variables ensuring the development and application of ecologically based management principles.

The Kitsim project was one of the sites visited on the Sunday field trip at the F.A.N. Fall Meeting held in Brooks on September 13-14. See meeting report under F.A.N. News.

Literature Cited

Clarke, S.E., and E.W. Tisdale. 1945. The chemical composition of native forage plants of southern Alberta and Saskatchewan in relation to grazing practices. Canada Dept. Agric. Tech. Bull. No. 54.

Authors' Addresses:

1. Kim Schmitt, Ducks Unlimited Canada, Brooks, Alberta T0J 0J0.
2. Bill Shanks, Eastern Irrigation District, Brooks, Alberta T0J 0J0.

The photo was taken along Jasper Park's Icefields Highway sometime during the 1970s when wolf numbers in the park were estimated at 100-170. At present, they are down to about 60 (Warden's Office Data).

The status of the Woodland Caribou in Alberta was outlined in an article which appeared in A.N. Vol. 16(3): 73-78.

Photo: H. Fuhrer; Courtesy: L. Carbyn

The Proposed Wolf Kill in Willmore Park - A Step Backward in Wildlife Management?

Dick Dekker

Mountain Caribou in Willmore Wilderness Park and adjacent Jasper National Park, that migrate in winter to forest lands near Grande Cache, have declined from 1200-1800 in 1968 to less than 300 today. The causes are listed as predation, hunting, and disturbance on the winter range (Edmonds and Bloomfield 1984).

A Caribou Restoration Plan currently before the Alberta Fish & Wildlife Advisory Council includes recommendations to: (a) curb human-caused mortality; (b) improve timber harvest guidelines to reduce habitat destruction; (c) kill up to 70% of the wolves in Willmore Park over 3-4 years.

I am sure all naturalists would support and applaud the first two recommendations, but I for one strongly oppose the wolf kill for the following fundamental and specific reasons.

I value caribou as much as wolves, but the two species should be allowed to work out their own balance on wilderness lands such as Willmore Park. Caribou should not be seen as a commodity, but as part of a wildlife community of which wolves are an integral component.

The caribou population decline, as reported in the government study, needs to be put in perspective. The 1968 peak in numbers was an "unnatural" peak, reached after 15 years of wolf poisoning in the park, and before the Grande Cache townsite, railroad and highway had been built across the caribou winter range.

Not only caribou but also other ungulate populations were very high in the 1960s. In Banff and Jasper Parks elk were overgrazing winter range and had to be culled by wardens.

Wolf poisoning by government agencies in and near Willmore Park was halted in 1966. Because of the large prey base available to them, wolves increased quickly. In the northern portion of Jasper Park their numbers grew from 2-8 in 1965 to 24-30 in 1977 (Dekker 1986).

Caribou declined drastically in the 1970s, and so did elk and moose. Reasons were: (a) increased wolf predation; (b) high hunting quotas including seasons on female elk and caribou; (c) increased hunter access and mobility; (d) poor ungulate winter range due to overgrazing (Dekker 1985).

By 1980, hoofed mammal populations had reached very low levels. Wolves "crashed" in 1983. During the fall of 1986 Jasper Park wardens reported wolves very scarce in the entire northern portion of the park (Pers. comm. A. Macdonald, North Boundary Coordinator J.N.P.)

Could it be that these extreme fluctuations of ungulates and wolves were the result of unwise wildlife management policies of the 1950s and early 1960s?

After 1966, wildlife managers in Alberta were more tolerant of wolves, and predator/prey systems in west-central wilderness lands were allowed to find their own balance. I hope that the Alberta Fish & Wildlife Division will continue this 20-year policy, even if it means that a recovery of caribou numbers will be slow.

The Caribou Restoration Plan claims that the Willmore population could be enhanced by wolf control on caribou calving grounds. Increases in calf survival were reported from British Columbia after government wolf kills. However, wolf controls might only provide a short-term solution to what is essentially a long-term problem.

Caribou are quite capable of coping with wolves at naturally regulated levels. A present-day example is the caribou herd near Maligne Lake in central Jasper Park where wolf numbers have not been controlled for 25 years. Over-hunted caribou populations can bounce back once hunting pressures have been reduced for a sufficiently long time, as evidenced by the recent spectacular growth of barren-ground caribou herds in Canada's North (Struzik 1986), where no large-scale wolf control measures were taken during the past 20 years.

Mountain Caribou bull with cows in Willmore Park.

Photo: Alberta Fish & Wildlife Division

Edmonds and Bloomfield (1984) suggest that timber extraction on winter range will enhance habitat for moose, elk and deer, thus expanding the prey base for wolves, that would become a menace for caribou. I submit that wolf controls would boost the growth of moose and deer populations even more, and create a larger prey base. Once controls are lifted, wolf numbers would expand quickly, and a destructive cycle, similar to 1966-1980, could begin again.

As stated before, wolves are now scarce in Willmore and adjacent Jasper Park. Human-caused mortality of wolves in the foothills and mountains is already high (Schmidt and Gunson 1985; Dekker 1986). Therefore, I fail to see the need for government-sponsored wolf controls in the area.

The major casualty of the proposed wolf kill, if it goes ahead, would be 20 years of good wildlife management that has allowed the large mammal systems of Willmore and Jasper Parks to find their own equilibrium, for the first time since the early 1800s when Europeans began to arrive.

Elk populations in northern Jasper Park are beginning to increase again. Given time, caribou may also reverse their decline without the controversial wolf kill measures proposed in the Caribou Restoration Plan.

Literature Cited

Dekker, Dick. 1985. Elk population fluctuations and their probable causes in the Snake Indian Valley of Jasper National Park: 1970-1985. Alberta Naturalist 15(2):49-54.

Dekker, Dick. 1986. Wolf numbers and colour phases in Jasper National Park, Alberta: 1965-1984. Canadian Field-Naturalist 100: In Press.

Edmonds, E.J. and M. Bloomfield. 1984. A study of Woodland Caribou in west-central Alberta: 1979-1983. Alberta Energy and Natural Resources Report. 203 pp.

Schmidt, K.P. and J.R. Gunson. 1985. Evaluation of wolf-ungulate predation near Nordegg, Alberta. Second-year progress report, 1984-85. Alberta Energy and Natural Resources Report. 53 pp.

Struzik, Ed. 1986. Biologists puzzled about caribou increases in Canada's North. Edmonton Journal September 22; CWD Newsletter 4(3):2-3 .

Author's Address:
3819-112A Street, Edmonton, Alberta T6J 1K4.

F.A.N. NEWS

Future F.A.N. Meetings

January 24-25, 1987 - Calgary - Urban Natural Areas Meeting and Annual General Meeting.

May 23-24, 1987 - Banff/Canmore - Spring Meeting, hosted by Bow Valley Naturalists.

July 1987 - South Castle - Summer Field Meeting to visit this significant wildland area.

September 1987 - Red Deer - Fall Meeting, hosted by Red Deer River Naturalists.

January 1988 - Edmonton - Annual General Meeting.

Urban Natural Areas Workshop

Please note that the Urban Natural Areas Workshop is being held January 24-25, 1987 (*not* 1986 as shown on the brochure in the last issue). Below is a summary of the agenda for the workshop.

WORKSHOP PRESENTATIONS: Saturday, January 24, 10:00 a.m.-5:00 p.m. Public forum on the role, values and management of urban natural areas in Alberta. Topics include case histories of Alberta Urban Natural Area Programs, urban wildlife and habitat, opportunities for use of urban natural areas, and what you can do to promote natural areas.

BANQUET: Saturday January 24, 7:00 p.m. Speaker: Dr. Jim Butler will speak on a favorite topic - Watching Birdwatchers.

FIELD TRIPS: Sunday, January 25, 10:00 a.m.-4:00 p.m. Leaders from Calgary's naturalist community will introduce interested participants to the range of special urban natural areas within Calgary. Transportation by car-pooling.

F.A.N. BUSINESS: Sunday, January 25, 9:00 a.m.-3:00 p.m. F.A.N.'s Board of Directors meets from 9:00-12:00. Brief meeting at 12:00-12:30 for all F.A.N. members, to announce Executive and President's Report.

Participants must register by January 10. Fees are $10 for F.A.N. members, $15 for non-members. Cost of banquet is $20. For further information contact David Ealey (434-0841) or Celeste Ference (422-9158) in Edmonton, and Maryhelen Posey (282-3997) or Don Stiles (271-4689) in Calgary.

F.A.N. Membership Drive

At our meeting in Brooks, the Board of Directors agreed to set a goal for future membership directly in F.A.N. Currently our direct subscription of the *Alberta Naturalist* is approximately 400. The goal over the next year is to double that number. Considerable effort has been made at an executive/board level to secure new subscriptions through direct approach to schools. Further efforts will be directed to public libraries across Alberta.

But we need you, the keen naturalists of this province, to help strengthen our provincial roll call. If each member enlists one new member over the next year we can reach our goal.

F.A.N. Bylaw Addition - Regionalization

Our strength as an organization has largely come from our corporate member clubs, but there are many members who live outside the region of a local club. For F.A.N. to be a more effective representative of your concerns, and to serve you better, we need closer communication with you and a broader membership base. At our next Annual General Meeting, the Board of Directors will be making an amendment to our bylaws to establish a regionalized structure for F.A.N.'s activities, that in the long-term should enable us to operate better in a broad provincial sense. The province will be divided into eleven (11) regions, similar to the compilers regions for Alberta Bird Record (copies of map available to interested members, from F.A.N. office). The objectives will be to encourage new clubs in each region, and to make F.A.N. a stronger provincial organization.

Membership Dues

It was recommended by the Board of Directors to increase Subscribing Membership Dues after the next Annual General Meeting (January 25, 1987). Current rates of $10/year will increase to $15/year. This is an increase of less than the price of an adult movie ticket! Supporting Membership dues will remain at $25/year; any amount over $15 is a donation to F.A.N. and will be acknowledged with a receipt that is eligible for deduction from taxable income. As before, seniors will receive a 20% discount on their membership — please let us know if you qualify.

There were many reasons for the Board of Directors to recommend the increase:

1. for F.A.N. to continue to provide the services it does to its members and the public,

2. to maintain the quality of the *Alberta Naturalist,*
3. to continue in the important role as the provincial advocate representing naturalists.

It has been 5 years since the subscription dues were last increased; over that time our annual budget has increased over 10 times, largely through the assistance of grants and ongoing support from Alberta Recreation and Parks. With the additional financial support from our membership at this time, we can demonstrate to the granting agencies that we are shouldering more of the responsibility for our association's activities. Also, with additional funds we can complete some administrative projects that will keep executive costs from rising, and should free our executive and executive assistant to concentrate their efforts on naturalist activities and on promoting natural history throughout Alberta, rather than on administrative procedures.

Report on F.A.N. Fall Meeting, Brooks, Alberta

The F.A.N. Fall Meeting was held in the Brooks Recreation Centre on September 13th and 14th. The theme of the meeting was *Wildlife and Agriculture - Living Together.* The meeting was organized by the recently formed Grasslands Naturalists of Medicine Hat. Although the weekend weather was dull and chilly with occasional rain, an enthusiastic group was in attendance.

On Saturday, while the Directors struggled with the important business of keeping the Federation running smoothly, the remaining participants ventured forth on a number of field trips in the Brooks area, including the Horticultural Station, the Brooks Wildlife Centre, and Dinosaur Provincial park, a World Heritage Site. The evening program featured Miles Scott-Brown, Executive Director of the *Wild West* program of World Wildlife Fund Canada. He spoke on the progress of this program aimed at preservation of endangered species across the prairies. (The text of Miles' presentation can be found elsewhere in this issue.)

On Sunday, Perry McCormack, a Ducks Unlimited biologist, introduced the group to the Kitsim Project, a water management project designed to improve habitat for both wildlife and livestock. (A summary of the project can be found elsewhere in this issue.) The Ward Ranch, a property recently acquired by D.U., and slated for development similar to that of the Kitsim project, was also briefly discussed. Following the introduction, the group proceeded out on a field trip to visit both of these areas. To the surprise of those present, a Blue Jay was heard in the parking lot on departure. It seemed quite out of place in an area such as the short grass prairie surrounding Brooks. Despite the extensive terrain manipulation involved in the establishment of the Kitsim Project, the final result blends in well with the surrounding landscape. Unexpectedly, the highlight of this field trip was the finding of a recently expired White Pelican with its pouch still full of small fish. The poor bird had probably struck the overhead power lines during the early morning fog. The bird was taken for a museum specimen, but the individual who did the collecting did not seem anywhere near as interested in a freshly-killed skunk seen later on the highway. Strange prejudices!

There is a small group of keen naturalists in the Brooks area and the hope is that they may soon be starting a local natural history society. F.A.N. wishes them and the Grassland Naturalists of Medicine Hat every success.

J. Derek Johnson

Klondike Days Report 1986

This year the 1986 F.A.N. display program focused on Edmonton's Klondike Days, July 17-26. My job was to develop an attractive display around the theme "Habitat for Wildlife," which proved to be very successful.

To provide the public with information on how to attract wildlife to their backyard, I developed one-sheet hand-outs from several sources including 4-H Habitat projects, Alberta Fish and Wildlife, and the Canadian Wildlife Service. These hand-outs proved popular and included birdhouse and birdfeeder designs for different species, and a convenient reference sheet with a "4 Point Plan to Attract Wildlife." As well, I designed a brochure entitled "Garden Trees for Attracting Birds." Thanks to Roger Vick who wrote the original article from which the information was taken. The brochure also lists suppliers of native trees in the Edmonton area. Each supplier made a donation in return for having their company name listed; consequently, we were able to recover our printing costs on 5000 brochures.

In addition to the educational hand-outs, we also had brochures from the three clubs who shared the booth with F.A.N.: the Edmonton Natural History Club, Edmonton Bird Club, and the 4-H Club. Thanks to the many volunteers from these clubs who helped staff the booth, and without whom we would not have been able to operate. Also, thanks to Teresa Eleniak from the 4-H Habitat projects who was at the booth every day.

The cost of staging a wildlife display would be exorbitant if it were not for the donations of several organizations. Our thanks go to the John Janzen Nature Centre for supporting us with specimens and volunteers. The Zoology Museum at the University of Alberta also lent us several specimens including a Peregrine Falcon. The Alberta Tree Nursery and Horticulture Centre lent us a variety of trees which greatly enhanced the display. Dayconsult donated the fireproofing for our mural backdrop, and Klondike Days management gave us $300 worth of passes for our volunteers. Many thanks to these organizations for their help.

Based on total attendance figures, over 165,000 people saw our display at Klondike Days. Over 32,000 talked to us or took information brochures. Although this did not result in many people joining a club immediately, this type of exposure can only be advantageous in the long-term. Moreover, increased awareness of wildlife and its habitat assists the overall goal of promoting wildlife conservation - something we are all eager to do.

Brent Handel, Display Coordinator

C.N.F. field trip participants take a break along the La Manche River, Avalon Peninsula, Newfoundland.

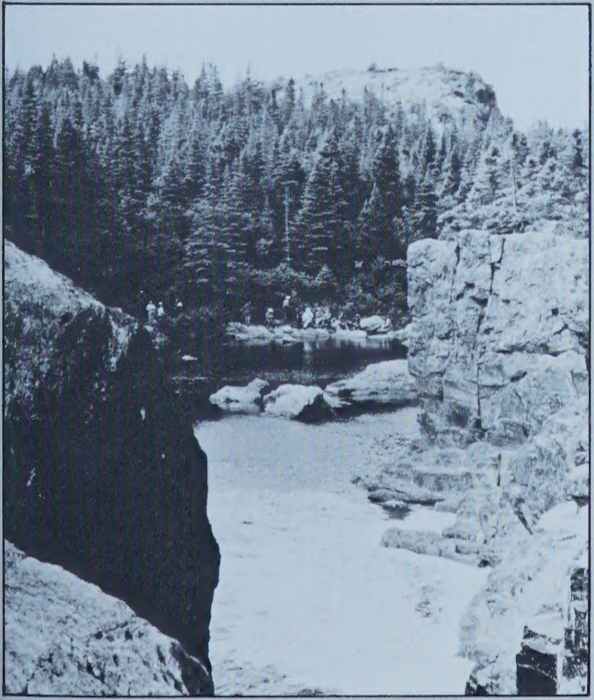


Photo: J.D. Johnson

Report on C.N.F. Conference, St. John's, Newfoundland

The 15th annual conference of the Canadian Nature Federation was held at Memorial University in St. John's, Newfoundland, July 23-26. Both the setting and the conference theme in general proved to be good choices, although both the organization of the conference and the conduct of the field trips were wanting in some aspects. The theme for this year's conference was *Our Island Ecology - A Vanishing Wilderness* and it was organized by the Newfoundland Wilderness Society. Attendance was in line with conferences of recent years (perhaps slightly lower than what it might have been due to the unavailability of space on many of the field trips), with a good cross-section of participants from across the country (there were 7 from Alberta that I am aware of). Of note were three people from the French islands of St. Pierre et Miquelon off Newfoundland's south coast and a couple of people from the New England states.

The isolation provided by the ocean combines with a demanding climate and rugged geology to make the flora and fauna of Newfoundland biologically unique. Although some of the oldest settlements in North America can be found in Newfoundland, much of the island remained a wilderness for many generations.

However, the 20th century has brought many changes. Both the population and technology for developing the province's natural resources has increased greatly. These developments have had many effects on the island's ecology, and that of the surrounding seas. In many cases, the full consequence of these changes cannot yet be appreciated, but Newfoundland is defintely losing its wilderness character.

The conference itself got off to a good start with a wine and cheese reception at the new Northwest Atlantic Fisheries Centre. It is a most interesting building in design, with many highly informative displays prepared by the Department of Fisheries and Oceans and a lovely panoramic view of St. John's.

Perhaps the highlight of the entire conference was the "Newfie Night" where, after a traditional Newfoundland meal, the conference participants were officially "Screeched-in" as Newfoundlanders. This involved an interesting and "different" procedure. The first step involved sampling some Newfoundland steak (= bologna), followed by kissing a cod fish (at least it was fresh!), then reciting a phrase that most of us forgot as soon as we uttered it. This was followed by being knighted on both shoulders with an oar and finally by the downing of a generous helping of Newfoundland Screech. All of this was done on our knees. To my knowledge, all of the participants survived the experience. The Master of Ceremonies for the evening was a darling gentleman, full of typical Newfoundland wit and charm. An example: Newfoundland has always had close ties with Great Britain and to maintain this tradition Premier Brian Peckford is considering having all the trucks and buses in Newfoundland drive on the left hand side of the road. If this works out well, in a year's time he'll have all the cars doing it too!

The Symposium turned out to be an interesting and informative day, run more smoothly and far less politically-oriented than last year's symposium in Ottawa. A wide range of topics on the ecology of Newfoundland was covered.

The opening talk was on Wilderness Areas. Take heart Alberta, we are not the only province dragging our heels in this area. Newfoundland has had a Wilderness Act in place for 6 years, but has yet to declare a single area under it. The locals hope that if it takes at least 6 years to designate a Wilderness Area it will take at least that long for the bureaucracy to "undesignate" it. The second presentation was on 30-year-old Terra Nova National Park. This is one of the areas where the Pine Marten has been reintroduced to Newfoundland. Dr. Guy Brassard of Memorial University followed with a talk on "Barrens and Bogs" which cover a lot of the Newfoundland landscape. There are 40 species of peat moss *(Sphagnum)* found in Newfoundland; tha' is just about double the number found in Alberta. The peatlands of Newfoundland present a challenge in plant identification and an interesting study in ecology. The spectacular beauty of the alpine barrens in Gros Morne National Park illustrates that Newfoundland is well blessed with diverse landscapes.

Being an island ecosystem, the aquatic environment, both marine and fresh water, is very important to Newfoundland. Freshwater fish, whales and seals were the subjects of the next three presentations. A total of 20 species of freshwater fish are found on the island of Newfoundland. In general, the populations are in good shape, but stream channelization and improperly installed culverts threaten the spawning grounds of some species in a few localized areas. Sixteen species of whales and 6 species of seals occur in the waters off Newfoundland. Whale-watching has become an important part of the tourist economy.

Seabirds have become increasingly important animals of study as the two following presentations indicated. Not only can the general health of the environment be determined by studying the breeding successes and failures and range expansions or losses of seabirds, but they are also being used more and more to monitor the status of the Newfoundland fishery. The species and numbers of fish that the birds are eating is proving to be a useful indicator of the population status of some of the food fish of some of the important commercial species in the Newfoundland fishery.

Perhaps the most unusual presentation at the Symposium was that of the group from St. Pierre et Miquelon. They gave a talk on the Grand Barachois, a salt water lagoon at the south end of Miquelon Island, that the islanders are attempting to get the French government to preserve as a natural area. Currently, shooting and unrestricted use of A.T.V.'s are threatening the integrity of the area. One of the resolutions passed at the Annual General Meeting was to support the islanders in their attempts to have the area preserved. It is interesting to note how the concerns of naturalists transcend international boundaries.

The final presentation of the day was by Bernard Jackson, the director of the Memorial University Botanical Garden. He has a special interest in butterflies and he outlined some of the particular plantings that have been made at the Garden in order to provide food plants for both the larvae and adults of as many of the native Newfoundland butterflies as possible.

The Saturday evening banquet to wind up the conference featured a seafood dinner, followed by introduction of the new C.N.F. board and presentation of the Pimlott Award. The speaker for the evening was Environment Minister Tom McMillan.

I am sure those fortunate enough to get on a field trip found it a most rewarding experience; I certainly enjoyed the four days I spent touring the Avalon Peninsula. Highlights would have to include the hundreds of Woodland Caribou seen on the barrens, the extensive seabird colonies at Witless Bay, and the spectacular Northern Gannet colony at Cape St. Mary's, the second largest of the six North American colonies after Bonaventure Island in the Gulf of St. Lawrence.

The caribou herd on the Avalon Peninsula certainly has to rate as one of the successes in wildlife management. The total herd now numbers about 6000 animals and can be seen within a 2½ hour drive from St. John's. In 1956-57, biologists counted 71 caribou in the area. For many years they had been harvested by anyone who wanted meat. The provincial government then put a ban on hunting and obtained the cooperation of the locals to leave the caribou alone. Numbers slowly began to build.

The whole herd returns to the same calving ground, an area of about 50 km², each year. They remain there for a short time and it is then that lynx, the main predator, get the calves. Then the caribou move south about 50 km before returning again to the calving ground the following spring.

As the population began expanding, they moved further south each year. After about 10 years of protection, numbers had increased enough that they reached the southern road across the Avalon. For the next 8 to 10 years the road acted as a barrier. Then one year, six animals crossed; the next year 50 ran across; then 100 made it; and now 1500 to 2000 animals cross it annually.

The greatest attraction at the seabird sanctuary at Witless bay are the abundant Atlantic Puffins with their underground nests dug into the sides of hills. Also nesting or seen at the sanctuary were Common Murres, Razorbills, Black Guillemots, Herring Gulls, Greater Black-backed Gulls, Black-legged Kittiwakes and Northern Fulmar. The gulls have become quite adept at harassing the puffins, forcing them to give up their fish meals. Even the smaller kittiwakes seem to have picked up this trick from the larger gulls.

The tens of thousands of nesting pairs of Northern Gannets at Cape St. Mary's create a lot of noise (and smell!), but it is a truly remarkable sight to see so many birds in such a small area. The area is often very foggy, but fortunately it lifted in time for us to get a good look at the colony. The colony has reached maximum occupancy and the gannets have been seen prospecting for new nesting territory. Thousands of pairs of Black-legged Kittiwakes also nest on the cliffs in the area.

The 1987 C.N.F. conference will be held in Saskatoon, June 5-8, to mark the centennial of wildlife conservation in Canada. The 1988 conference will be held in Yellowknife, N.W.T., one of the more interesting venues for a C.N.F. conference.

J. Derek Johnson

CLUB NEWS

Lethbridge Naturalists' Society

President - Paul Wilkinson. *Vice-Pres.* - Wm. Brown. *Treas.* - F. Russell. *Rec. Sec.* - L. Golsteyn. *Cor. Sec.* - C. Goodall. *Directors* - B. Luco, K. Russell, D. Williams, L. McKillop.

During the year large areas of new parkland were added to the city, including large natural areas. Several members have contributed to this highly desirable development by committee work, in addition to the direction of this project by Bill Brown. The Helen Schuler fund is now almost completely spent on assistance to the Nature Centre and will probably be wound up to simplify accounting procedures.

Winter meetings were well attended with 20-54 people present and most summer outings were well attended, especially the Sage Grouse trip in April, with over 40 present despite the early hour. Details of summer outings will appear in winter newsletters. Many thanks are due both to winter speakers and summer leaders.

Winter Meetings - Subject and speaker.
Oct. - Annual General Meeting and Members night.
Nov. - 'Beaver Fever' (P. Lewis)
Jan. - 'Conifers' (C. Pielou)
Feb. - 'Raptors' (C. Weir)
Mar. - 'Bluebirds' (D. MacIntosh)
Apr. - Habitat Management (L. Fitch)

Summer Outings - leader
10th May - Milk River Ridge (M. Bailey)
11th May - Russell Farm (K. Russell)
24th May - Spring Bird Count (M. O'Shea)
31st May - Waterton Bird Count (T. Dolman)
7th June - Beaver Mines Lake (K. Russell)
15th June - Riverine Park (D. Rhodes)
26th July - Allison Creek & Star Creek
(A. Luchansky)
23rd Aug. - Tyrrell Museum (Bill Brown)
7th Sept. - Annual Picnic

Six formal and one informal Executive meetings were held. I would like to thank all members for their enthusiastic help and particularly Teresa Dolman and Lorraine Golsteyn for the excellent Newsletter and typed minutes respectively.

Paul R. Wilkinson

NOTES AND NEWS

Go-pher Saskatchewan in 1987

16th Annual CNF Conference, University of Saskatchewan, Saskatoon, June 5-8, 1987

Help us celebrate a Century of Wildlife Conservation - on the 100th Anniversary of Last Mountain Lake Wildlife Sanctuary - Canada's first.

Join us for field trips as far north as Churchill, Manitoba, and as far south as the Cypress Hills, Saskatchewan - from tundra to boreal forest to aspen parkland to grassland.

The symposium emphasizes Conservation on the Prairies - past and present. The banquet features Saskatoon berry pie and other local treats. A wine and cheese party at the Diefenbaker Centre highlights a Nature Art show as well as Diefenbaker memorabilia. Accommodation and meals are available on the greystone campus of the University of Saskatchewan.

Watch for further details of the conference in the Winter issue of *Nature Canada.* Those interested in pre- or post-conference field trips should write now for information to: CNF Conference 1987, Box 5094, Saskatoon, Sask. S7K 4E4.

Orval Pall Memorial Fund for Wilderness

Orval Pall, the wildlife biologist from Calgary who died June 6 while at work in the rugged Kananaskis mountains, was an avid user of wilderness and a strong advocate for its protection. His research on cougars was also centered in wilderness.

In memory of Orval Pall, an on-going trust has been established, called the "Orval Pall Memorial Fund for Wilderness". Contributions will be administered through the Alberta Wilderness Association for specific programs and research projects aimed at the protection of wilderness, wild rivers and wildlife species that depend on wilderness for their survival.

Orval had a special affection for wild rivers as he was a keen recreational canoeist. Through his years as a dedicated wildlife biologist in Alberta, he developed a deep concern for those species that depend on having wild lands essentially free from man's disturbances, such as cougars, grizzly bears and wolverines. He fully realized that as such lands disappear, so too do many of the species that cannot coexist with man's developments.

Contributions to the Orval Pall Memorial Fund for Wilderness may be made to the Alberta Wilderness Association, Box 6398, Station D, Calgary, Alberta T2P 2E1. Tax deductible receipts and special thank-you cards will be returned to each contributor.

From the CSEB Newsletter.

From Ashes to Forest

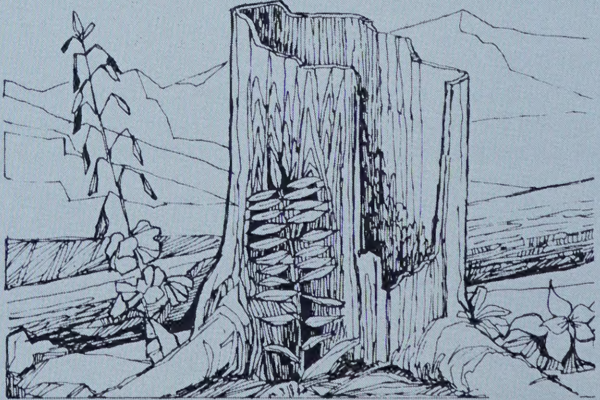
An unusual and informative documentary, "From Ashes to Forest," shows some excellent footage of the Vermilion Pass burn in Kootenay National Park. The viewer is introduced to the latest methods of fighting forest fires and a relatively new technique called the "controlled burn."

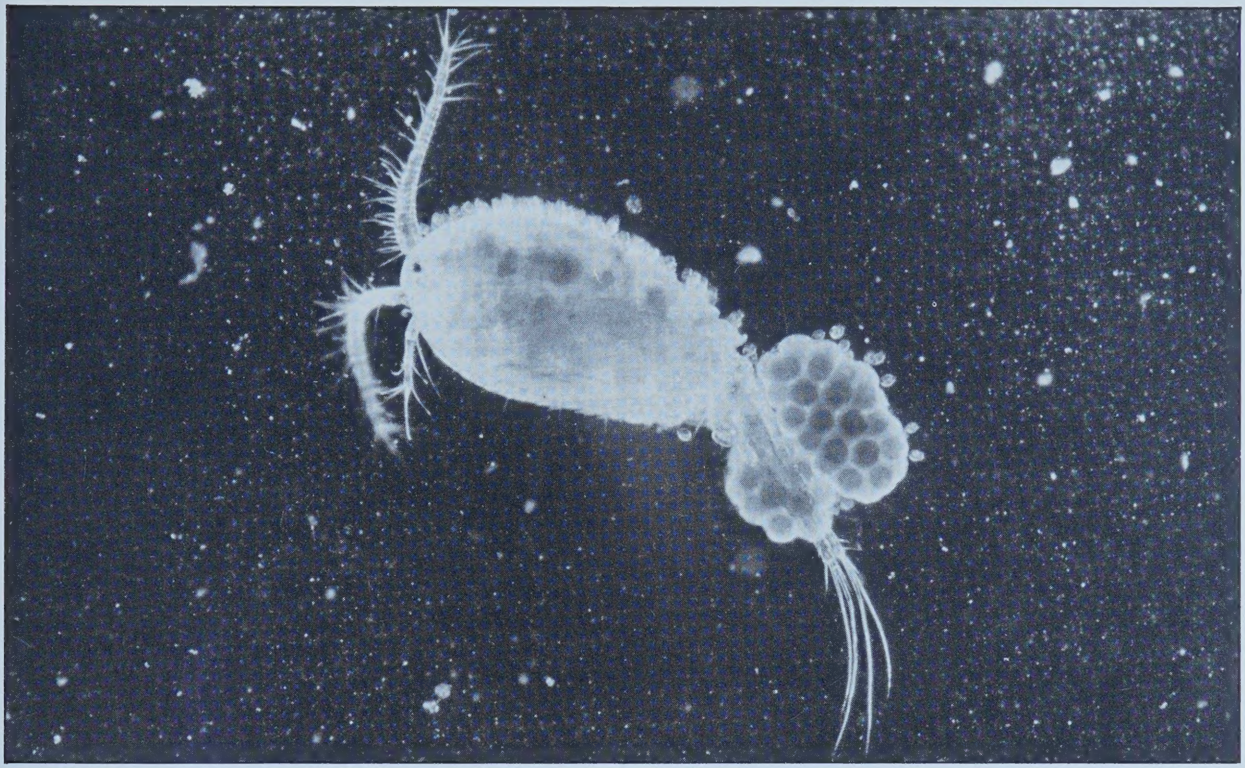
For generations, man has feared fire in the wilderness. Now conservationists have found that fire can be a beneficial natural agent in rejuvenating the forest and protecting wildlife.

The film visits Nahanni National Park Reserve where there are no roads, and park authorities have no choice but to let fires run their course. On the other hand, scenes from Kootenay National Park show how fires have been suppressed for tourist safety, preservation of property and provincial forest - but, as the film points out, the resulting unnatural environment is driving out the area's wildlife.

Natural history clubs interested in seeing how our policy on forest fires is changing in national parks may borrow the film through the National Film Board Office, Government of Canada Building, 220-4th Ave. S.E., Calgary, Alberta T2G 4X3.

L.R. Halverson
Park Naturalist, Kootenay National Park.





Cyclops *are often abundant in bodies of fresh water. The adult females are easy to identify by their twin egg masses. The large antennae on the top of the head are used for swimming, propelling the cyclops in a jerky fashion. They are small predators, typically 1 to 3 mm long, and their mouth parts are specialized for seizing and biting. The cyclops eats almost anything small enough. The eggs hatch into a larva which looks like a miniature mite. The larva goes through six stages, then five copepoid stages which progressively look more like the adult, and finally reaches the adult stage. In all forms, the cyclops is an active, swimming predator.*

On the back and egg masses of the cyclops in the photograph, there are small spheres. These are Vorticella, *a single-celled animal attached by a stalk. These are not parasites but are commensurals since they do no harm to the host. (Photo and caption by Tom Branch.)*

F.A.N. Membership Fees Are: Regular $10 per year; Supporting, $25 or more per year (with excess over $10 being deductible from your taxable income):

ENCLOSED IS $_____ COVERING A _____ YEAR REGULAR MEMBERSHIP

ENCLOSED IS $_____ COVERING A _____ YEAR SUPPORTING MEMBERSHIP

NAME ______________________________

ADDRESS ______________________________

______________________________ POSTAL CODE ______________________________

SEND TO:
FEDERATION OF ALBERTA NATURALISTS
Box 1472, Edmonton, Alberta T5J 2N5

Alberta Christmas Bird Counts, 1985

Andrew Slater

An extremely successful Christmas Bird Count season was held in the province this year, in universally mild weather. The number of counts reporting was 21, the same as in the previous two years. The number of species recorded was 95, up 10 from last year, and the highest since 1982. The total number of individual birds counted rose from 51,519 to 63,872 and the number of count participants from 356 to 430.

Calgary achieved a new high species count for Alberta, and the Prairie Provinces of 59, comfortably retaining the Turner-Halladay Trophy. In view of Calgary's monopoly of the species count trophy in recent years, I thought it would be interesting and generally encouraging to compare each count's species total this year with its average for the previous 5 years.

The table shows the counts that have been running for at least 6 years.

Fort McMurray emerges as the winner with the highest improvement on a percentage basis, thanks in part to a very low number in their first year; while Red Deer had the highest improvement in absolute terms, thanks in part to an effort to increase their habitat coverage. I welcome reader's comments on this method of evaluating the competitive aspect of C.B.C.s, with a view to making it a permanent feature of this report.

The highlights on the Banff/Canmore count this year were a Northern Shrike, a Song Sparrow and 3 White-throated Sparrows. The Bow Summit count was happily resumed after missing last year, but could find no White-tailed Ptarmigan.

Calgary turned out no fewer than 81 participants, including 28 feeder watchers. 17,783 Mallards were counted (with difficulty!), exceeding last year's previous record by 51 per cent. The ponds of a water treatment works on the eastern edge of the city were found to be "shore-to-shore Mallards." A Great Blue Heron was a surprise after November's very cold weather, while the Blue Jay is now clearly a regular winter resident in the city. It was pleasing, too, to have Pine Siskins back on the count after an 8-year absence.

Edmonton added a House Finch (a male) to their all-time C.B.C. list. The sides of the breast on the bird were noted as being distinctly brownish-streaked, but unfortunately it was seen only briefly by one observer. An amazing 23 White-throated Sparrows were reported from Edmonton; the previous province-wide highest total was only 7!

Edson was pleased with 3 Great Gray Owls but disappointed to find no Barred or Saw-whet Owls or Spruce Grouse. Elk Island reported a Loggerhead Shrike, only the second ever on an Alberta C.B.C. The compiler of this count was satisfied by

Count	1979	1980	1981	1982	1983	1984	Previous 5 Year Average	1985	Improvement (species)	Improvement (per cent)
Banff	38	39	45	45	38	38	41.0	38	- 3.0	- 7.3
Bow Summit	16	13	7	10	7	—	10.6	10	- 0.6	- 5.7
Calgary	47	49	56	53	53	56	53.4	59	5.6	10.5
Edmonton	38	35	37	36	41	43	38.4	43	4.6	12.0
Edson	—	19	24	26	22	20	22.2	21	- 1.2	- 14.6
Erskine	11	22	18	13	16	12	16.2	15	- 1.2	- 7.4
Ft. McMurray	—	5	11	19	10	15	12.0	16	4.0	33.3
Lethbridge	35	40	36	22	32	33	32.6	26	- 6.6	- 20.2
Red Deer	27	26	26	20	32	30	26.8	33	6.2	23.1
Snake's Head	—	27	30	27	37	29	30.0	34	4.0	13.3
Stettler	16	19	15	14	13	21	16.4	19	2.6	15.9
Wabamun L.	44	47	45	42	37	28	39.8	41	1.2	3.0
Wembley	—	18	24	27	22	26	23.4	21	- 2.4	-10.3
Wildlife R.	37	36	36	41	38	29	36.0	39	3.0	8.3

the identification of this easily confused species, but at the time of writing, details had not reached me.

The widespread occurrence of Harris' Sparrows in the fall resulted in single birds being seen on the Calgary and Fort McMurray Christmas Counts, while Claresholm and Lethbridge both had count-week birds. The Fort McMurray bird, of which a description was provided, was still present on the 12th of January.

I am pleased to welcome the fledgeling count at Fort Saskatchewan, which started with a bang by recording a Mourning Dove, seen at about 20 m in flight by an observer familiar with the species. This was the third C.B.C. record for Alberta and the first north of Olds/Sundre.

The Fort Smith count, almost half of whose circle is in Alberta, did turn up a Spruce Grouse, along with 5 Willow Ptarmigan which have previously been found once at Fort McMurray. Horseshoe Canyon recorded their first Short-eared Owl and 6 Pileated Woodpeckers, which seems a lot, way out in the badlands. Lethbridge counted 550 Canada Geese, beating their own provincial record of 490 in 1981.

Red Deer's new high of 33 species included 5 new to the count: Great Gray Owl, Northern Flicker, Brewer's Blackbird, Red Crossbill and American Goldfinch. This was only the second time Goldfinches have been reported on a C.B.C. in Alberta (there were 6 on the 1979 Edmonton count). Unfortunately no details were supplied of this or the Brewer's Blackbird report.

The Snake's head found 6 Great Gray Owls, double the previous high on any count, and added Northern Flicker to their list. Stettler provided this year's only addition to the all-time Alberta C.B.C. species list: Common Grackle. Five were reported frequenting a feeding station on the outskirts of the town by an experienced observer, but the sighting was not confirmed by other observers, unfortunately. Stettler also had a Cooper's Hawk, also reported by an experienced observer with no supporting detail.

This year's high species total was in no small measure due to Wabamun Lake finding lots of open water, no fog and respectable numbers of waterfowl. Their 2 Common Loons were outstanding, as this species has only been reported once before, a single at Wabamun in 1978. The Red-necked Grebe was also a second Alberta C.B.C. record, while the 12 Hooded Mergansers compare with a previous high of only 3. Four Hoary Red-

A total of 280 Downy Woodpeckers were reported during the 1985 Christmas Bird Count.

Photo: Jim R. Salt

Alberta Christmas Bird Count, 1985

	BANFF/CANMORE	BOW SUMMIT	CALGARY	CARDSTON	CLARESHOLM	EDMONTON	EDSON	ELK ISLAND	ERSKINE	FORT MCMURRAY	FORT SASKATCHEWAN	FORT SMITH	HORSESHOE CANYON	LETHBRIDGE	RED DEER	SNAKE'S HEAD	STETTLER	WABAMUN LAKE	WATERTON LAKES	WEMBLEY	WILDLIFE RESERVE	TOTAL
Common Loon	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	2	–	–	–	2
Red-Necked Grebe	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	1
Western Grebe	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	3	–	–	–	3
Great Blue Heron	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1
Canada Goose	–	–	27	–	–	–	–	–	–	–	–	–	–	550	–	–	–	–	–	–	–	577
Green-Winged Teal	2	–	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	6
Mallard	339	–	17783	–	–	412	–	–	–	–	–	–	–	400	250	5	–	2084	–	–	–	21273
Northern Pintail	–	–	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	3
Gadwall	–	–	7	–	–	–	–	–	–	–	–	–	–	–	–	–	–	26	–	–	–	33
American Wigeon	–	–	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	19	–	–	–	21
Canvasback	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	2	–	–	–	3
Redhead	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	17	–	–	–	18
Lesser Scaup	–	–	4	–	–	–	–	–	–	–	–	–	–	–	–	–	–	6	–	–	–	10
Common Goldeneye	48	–	422	–	–	2	–	–	–	–	–	–	–	100	1	–	–	287	4	–	–	864
Barrow's Goldeneye	2	–	7	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	9
Bufflehead	–	–	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	5	1	–	–	8
Hooded Merganser	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	12	–	–	–	12
Common Merganser	1	–	37	–	–	–	–	–	–	–	–	–	–	–	–	–	–	3	–	–	–	41
Red-B. Merganser	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Bald Eagle	1	–	2	–	–	–	–	–	–	–	1	–	–	4	–	–	–	2	–	–	–	10
Cooper's Hawk	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	1	–	2
Northern Goshawk	1	–	1	–	–	1	–	1	–	–	–	–	1	–	–	–	–	–	–	–	4	9
Rough-Legged Hawk	–	–	–	–	1	1	–	–	–	–	–	–	–	–	1	1	–	–	–	–	–	3
Hawk SP	–	–	–	1	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	1
Golden Eagle	–	–	–	–	1	–	–	–	–	–	–	–	1	2	–	–	–	–	2	–	–	6
American Kestrel	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1
Merlin	–	–	10	–	–	9	–	–	–	–	–	–	–	2	2	2	–	–	–	–	3	28
Gyrfalcon	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1
Prairie Falcon	–	–	2	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	3
Gray Partridge	–	–	92	1	73	36	–	–	–	–	–	–	21	–	–	8	–	–	–	–	3	234
Ring-N. Pheasant	–	–	12	–	–	–	–	1	1	–	–	–	7	11	2	–	3	–	–	–	–	37
Spruce Grouse	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	1
Willow Ptarmigan	–	–	–	–	–	–	–	–	–	–	–	5	–	–	–	–	–	–	–	–	–	5

Ruffed Grouse	–	–	3	–	–	4	5	7	–	–	–	–	–	–	7	4	2	10	–	11	15	68
Sharp-T. Grouse	–	–	3	–	–	–	–	–	–	–	–	–	–	–	–	4	3	13	–	2	5	30
Killdeer	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1
Rock Dove	–	–	624	38	100	1357	–	97	29	–	50	–	94	52	161	27	269	36	–	75	45	3054
Mourning Dove	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	1
Great Horned Owl	–	–	3	1	–	1	–	6	–	–	–	1	6	3	1	2	1	–	–	2	3	30
Snowy Owl	–	–	2	–	1	1	–	–	–	–	5	–	–	–	–	–	–	–	–	–	–	9
N. Pygmy Owl	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	1	2
Great Gray Owl	–	–	–	–	–	–	3	–	–	–	–	–	–	–	1	6	–	–	–	1	2	12
Short-Eared Owl	–	–	–	–	–	1	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	2
N. Saw-Whet Owl	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	1	–	1	3
Belted Kingfisher	3	–	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	5
Downy Woodpecker	10	–	47	1	2	40	8	26	8	1	6	1	12	11	35	21	15	12	–	4	20	280
Hairy Woodpecker	7	–	18	1	–	12	9	32	3	3	3	–	4	2	18	13	3	3	–	3	9	143
Three-Toed Woodp.	3	–	4	–	–	4	–	–	–	–	–	2	2	–	2	6	–	3	–	1	10	37
Black-Backed Woodp.	–	–	–	–	–	1	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	2
Northern Flicker	–	–	13	–	–	–	–	–	–	–	–	–	–	1	1	1	–	1	–	–	–	17
Pileated Woodp.	–	–	2	–	–	2	1	2	–	1	–	–	6	–	3	2	1	1	–	1	10	32
Horned Lark	–	–	–	2	10	–	–	–	–	–	–	–	2	25	–	–	–	–	–	–	–	39
Gray Jay	41	4	–	–	–	–	61	1	–	3	–	15	–	–	–	41	–	39	9	17	150	381
Stellar's Jay	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	6
Blue Jay	–	–	24	–	–	144	35	93	5	9	5	–	2	3	56	34	20	87	–	9	14	540
Clark's Nutcracker	46	6	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	2	–	–	54
Black-B. Magpie	81	–	1143	53	77	708	13	175	55	–	5	–	165	119	72	78	79	84	10	13	164	3112
American Crow	17	–	19	–	–	1	1	–	–	–	–	–	–	3	–	–	–	–	1	–	–	42
Common Raven	159	4	39	–	2	1	92	–	–	349	–	175	–	–	3	53	–	23	15	44	131	1090
Black-C. Chickadee	93	2	483	7	12	903	141	645	64	12	28	17	69	79	377	198	141	452	16	40	600	4379
Mountain Chickadee	82	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	11	–	17	111
Boreal Chickadee	46	18	37	–	–	21	14	5	–	2	–	31	–	–	33	91	–	43	8	–	240	589
Chickadee SP	22	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	22
Red-B. Nuthatch	88	2	87	1	–	38	4	–	2	–	1	–	30	2	47	113	–	11	32	–	293	751
White-B. Nuthatch	5	–	15	–	–	39	6	13	1	–	1	–	2	2	9	7	–	10	–	1	2	113
Brown Creeper	3	–	6	–	–	5	–	–	–	–	–	–	–	2	1	5	–	–	–	–	17	39
American Dipper	25	1	4	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	1	–	4	36
Golden-C. Kinglet	12	–	16	–	–	–	–	–	–	–	–	–	8	–	–	39	–	–	–	–	40	115
Townsend's Solitaire	–	–	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	2
American Robin	–	–	3	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	4
Bohemian Waxwing	–	–	3224	–	–	1583	–	1	–	–	770	–	591	25	922	–	44	70	–	–	–	7230
Cedar Waxwing	–	–	1	–	–	30	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	31
Northern Shrike	1	–	3	–	–	3	–	3	–	–	–	–	1	–	–	1	–	2	–	–	5	19
Loggerhead Shrike	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	1
European Starling	1	–	373	10	–	119	6	5	–	2	27	–	15	35	2	–	–	12	–	–	5	612
Am. Tree Sparrow	–	–	1	–	–	–	–	–	–	–	1	–	1	5	–	–	–	–	–	–	–	8
Song Sparrow	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1
White-T. Sparrow	3	–	–	–	–	23	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	26
Harris' Sparrow	–	–	1	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	2
Dark-Eyed Junco	16	–	5	–	–	18	–	1	–	–	2	–	–	–	2	3	–	–	–	2	3	50
Snow Bunting	30	–	2	65	–	75	2170	35	12	–	–	11	26	75	–	101	130	–	–	25	218	2985
Common Grackle	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	5	–	–	–	–	5
Rusty Blackbird	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	8	8
Brewer's Black.	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	1
Blackbird SP	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1
Pine Grosbeak	7	–	246	–	–	182	51	25	11	70	71	12	22	–	47	9	4	77	22	17	19	892
House Finch	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1
Red Crossbill	–	–	–	–	–	1	–	7	–	–	–	–	–	–	39	–	–	–	2	–	4	53
White-W. Crossbill	236	105	344	–	–	259	–	35	6	3	–	–	232	–	89	188	–	113	22	–	930	2562
Common Redpoll	10	–	445	–	–	229	23	115	–	139	40	137	580	22	246	275	–	436	92	120	1270	4179
Hoary Redpoll	–	–	–	–	–	2	28	1	–	7	–	3	1	–	–	–	–	4	–	4	4	54
Redpoll SP	–	–	–	–	–	–	33	–	183	–	–	–	–	–	–	–	155	–	–	–	–	371
Pine Siskin	13	5	19	–	–	1	–	1	–	–	10	–	–	–	7	–	–	1	17	–	8	82
Am. Goldfinch	–	–	–	–	–	–	–	–	–	–	–	–	–	–	12	–	–	–	–	–	–	12
Evening Grosbeak	101	–	183	6	–	192	48	416	25	207	60	–	47	–	271	75	2	201	–	8	9	1914
House Sparrow	67	–	1251	222	211	666	12	179	203	68	–	1	693	131	169	86	5	114	–	3	191	4082
Species Total	38	10	59	14	13	43	21	28	15	16	19	15	29	26	33	34	19	41	20	21	39	95
Individual Total	1626	148	27118	409	492	7130	2764	1929	549	940	1087	413	2651	1666	2889	1501	1073	4328	272	409	4477	63872
Observers Total	31	8	81	1	3	33	12	32	15	4	6	22	13	22	28	16	23	14	20	4	42	430

polls, a Saw-whet Owl which responded to initial calls and a Northern Flicker were all new to this count.

Waterton Lakes added Saw-whet Owl to their tally, while Wembley observers watched an immature Cooper's Hawk in flight that later perched at a distance of 45 m and was visible through a 20x scope. The Wildlife Reserve pulled in both Pygmy and Saw-whet Owls, as well as 3 Great Grays. This count produced some spectacular highest-ever totals, including Black-capped and Boreal Chickadees, Red-breasted Nuthatch, Brown Creeper, White-winged Crossbill and Common Redpoll. Last year they had the North American high of Gray Jays with 39. This year they found 150! It all shows what 42 observers can do in a productive mixed-forest count-circle.

Now for population trends. No fewer than 21 species established new provincial highs; the warm weather and increased observer turnout probably had something to do with this. The "Birds of the Year" were clearly two irrupting species, Red-breasted Nuthatch and White-winged Crossbill. The previous high for the Nuthatch was 87; last year produced a mere 47, while this year's abundance, noted by compilers across the southern part of the Province, tallied 751. The Crossbill's numbers were similar: the count of 2,562 compared with a previous high of 552 and last year's scant 92.

Woodpeckers were almost all in high numbers. Hairy and Pileated established new records, while Three-toed was found on more counts than ever before. Blue Jays and Black-capped Chickadees exceeded their previous highs (both last year) by 42% and 36% respectively, while Pine Grosbeaks were still around in good number, though slightly down from last year.

On the negative side, Northern Goshawks continue low for the second year, Snow Buntings were found in less than half last year's number, the

The majority of Snow Buntings recorded on the 1985 Count were seen at Edson (2170 of 2985).

Photo: Edgar T. Jones

lowest since 1980, and Gray Partridge reached the lowest number for more than a decade.

I would like to conclude by thanking all compilers for sending in their results and comments, especially those who met the January 30th deadline, those who supplied details of unusual sightings and those who used metric. Many thanks and keep up the good work!

Banff/Canmore
51°10'N 115°28'W, center on the Bow R. 7.25 km E of Banff in Banff Nat'l Park. Elevation 1341 to 2990 m. Habitat coverage as described 1976 AMERICAN BIRDS. December 21, 1985. Cloud cover: mostly clear, light snow in A.M. Temp: -7° to -2° C. Wind: W, 16-40 kph. Snow cover 10 to 25 cm. Fresh water mostly open. Wild food supply good.
31 observers, 21 in 11 parties, 10 at feeders. Total party hours 64 (53.5 on foot, 10.5 by car) plus 25 hours at feeders; total party km: 286 (92 on foot, 194 by car.)
In count area count week, but not seen count day: American Wigeon, American Coot.
Participants: Katie Anderson, Gunther Beer, Marie Boisvert, Heather Dempsey, Halle Flygare, Les Gyug, Doug and Pat Harvey, Stefan Jungkind, Reinhold Lang, Chris MacDonald, Diane and Mike McIvor (compiler - Box 114, Banff, AB T0L 0C0), Harold Mortimer, Debbie Mullins, Brian Patton, Joey Shulman, Barry Siegrist, Bonnie Sutherland, Keith Webb, Gerry Wilkie (Bow Valley Naturalists).

Bow Summit
51°39'N 116°25'W, center S end of Bow L. in Banff Nat'l Park. Elevation 1737 to 3192 m. Habitat coverage: coniferous woodland 64%, lakes and streams 24%, alpine meadows 12%. January 4, 1986. Cloud cover: Mostly clear. Temp: -21° to -8°C. Wind: S, 0-16 kph. Snow cover 80 to 100 cm. Fresh water mostly frozen. Wild food supply fair.
8 observers, in 6 parties. Total party hours 32 (26 on foot, 6 by car); total party km 265 (60 on foot, 205 car)
Participants: Les Gyug, Doug Harvey, Lloyd Lohr, Diane and Mike McIvor (compiler - Box 114 Banff, AB T0L 0C0), Don McPhail, Norbert Meier, Gerry Wilkie (Bow Valley Naturalists).

Calgary
51°03'N 114°05'W, center on Louise Bridge. Elevation 1018 to 1246 m. Habitat coverage as described 1972 AMERICAN BIRDS. December 22, 1985. Cloud cover: A.M. mostly cloudy, P.M. mostly clear. Temp: 8° to 12° C. Wind: W, 6-32 kph. Snow cover 0 to 20 cm. Fresh water partly open. Wild food supply good.
81 observers, 53 in 24 parties, 28 at feeders. Total party hours 183 (149 on foot, 34 by car) plus 224 hours at feeders; total party km: 1096 (269 on foot, 827 by car).
Participants: Stuart Alexander, Des and Liz Allen, Garfield Anderson, Francis Banack, Kathy Bangay, Jackie Blackpool, Denice Blais, Barbara Brookes, Darby Buckley-Jones, Mary Clitheroe, Doug Collister, Mary Coughlin, Elizabeth Dawson-Grove, Doreen Dickson, Ross Dickson, Morag Dorian, Dave Elphinstone, Joyce Elphinstone, John Engelman, Bitten Ertmoed, Wladimir Franco-Valias, Shirley Fraser, Barry and Howard Giles, Florence Godfrey, Joyce Goldsmith, Horst Grothman, Zoltan Gulyas, Michael Hagel, Willis Hall, Ian Halladay (compiler), Dorothy Hazlett, Eleanor Hebron, Frank Hennessey, Dorothy Hill, Cedric Hitchon, Yvonne Hodges, Andrew Holder, Olga Karasek, Paul Keogh, Gordon Kerr, Ken Kewish, Ted Koziel, Maurice Langpop, Jim and Pat Law, Sylvia L'Hirondelle, Corrine Lofthouse, Mac Love, Gerry Lunn, Joan and Malcolm MacDonald, Kitty Mahood, Carson Manzer, Dave Matthews, Jean Maudsley, Jean McCullough, John McFaul, Garry McKay, Betty Millham, Jean Moore, Lorraine Moore, Jamey Podlubny, Rick Riddell, Mike Rogers, Barbara and Peter Sherrington, Gwen Simpson, Andrew and Emma Slater, Don Stiles, Robert Storms, John Thompson, Marg Thompson, Suzanne Visser, Bill Walker, Bill Wilson, Allen Wiseley, Ray and Rob Woods (Members and friends, Calgary Field Naturalists' Society).

Cardston
Location surveyed: Cardston, Kimball Park, Woolford Park. December 26, 1985. Temp: -5° to -1° C. Wind: N, 0-10 kph.
1 Observer; total party hours 8; total party km 120 (5 on foot, 115 by car).
In count area count week, but not seen count day: Common Goldeneye, Prairie Falcon, Snowy Owl, American Crow, Common Redpoll.
Observer: Shirley Shaw (compiler).

Claresholm
NW and NE of Claresholm to about 16 km. December 26, 1985. Temp: -20° to -6° C. Wind: SW to N, 0-10 kph.
3 observers; total party hours 8; total party km 153 (3 on foot, 150 by car).
In count area count week, but not seen count day: Merlin, Great Horned Owl, Northern Shrike, Harris' Sparrow, Snow Bunting, Common Redpoll.
Participants: Hazel Hudson, Laurel Neubecker, Grace Horgard (compiler).

Edmonton
Count Center: SW corner of University of Alberta farm, as described 1974. 53°31'N 113°33'W. Elevation: 620 to 680 m. Habitat coverage: wooded ravines 50%, open fields and woodlots 30%, residential 20%. December 22, 1985. Cloud cover: A.M. partly cloudy; P.M. mostly clear. Temp: 6° to 8°C. Wind: WNW, 8 to 32 kph. Snow cover 2 to 15 cm. Fresh water partly open. Wild Food crop poor.
33 observers, 31 in 22 parties, 2 at feeders. Total party hours 107 (74.5 on foot, 32.5 by car) plus 9.5 hours at feeders; total party km: 620.5 (137.5 on foot, 483 by car).
Participants: Peter Achuff, David and Kim Allan, Leslie Baker, Elisabeth Beaubien, Wendy Calvert, Dave Cuthiell, Peter Demulder, Dave Dodge, Dave Ealey, Rainer Ebel, Jim Flatman, Miles Hennie, Alan Hingston, Greg Holmes, Geoff Holroyd, Harry Horton, Stefan Jungkind, Doug Krystofiak, Mal Landry, Jim Lange (compiler - 13216-128 Ave. Edmonton, Alberta T5L 3H2), Marg Lewis, Chel MacDonald, Pat Marklevitz, Janet and Ron McElhaney, Jack Park, Alf Scott, Bob Turner, Doug Wilson, John Young (Edmonton Bird Club, Edmonton Natural History Club, John Janzen Nature Center).

Edson
Within 12 km radius circle, centered at the town's center

Buffleheads were seen in open water at Calgary, Wabamun, and Waterton Lakes. Photo: Edgar T. Jones

- the same as previous years. December 22, 1985. Periodic cloudiness. Temp: -5⁰ to +7⁰C. Occasional light wind.

12 observers; more walking than last year, 450 km travelled by car.

Participants: Diane Birkett, Kent Delisle, Margaret Hird, Michael and Jimmy Johansson, Corey Kauffman, Chuck Lacy, Todd Mahon, Wade McDonald, Dean Mushtuk, Darren Petersen, Paul Marshall (compiler - Box 610, Edson, Alta., T0E 0P0).

Elk Island

Elk Island National Park, Alta. 53⁰37'N 112⁰52'W, center at the north end of Tawayik Lake as described in 1984. Elevation 700 to 755 m. Habitat coverage: aspen forest 70%, farmland 30%. January 4, 1986. 7:40 a.m. to 5:30 p.m. Weather clear. Temp. -12⁰ to -8⁰C. Wind: W, 0 to 16 kph. Snow cover 15 to 30 cm. Fresh water frozen. Wild food crop good.

32 observers, 32 in 15 parties. Total party hours 111 (11 on foot, 51 by car, 40 on skis, 9 on snowshoes); total party km 533 (19 on foot, 390 by car, 195 on skis, 19 on snowshoes).

Participants: Peter Achuff, Ed Andrusiak, Leslie Baker, Elisabeth Beaubien, Jean Burgess, Gordon Burns, Jim Butler, Bob and Jan Carroll, George Cheeseman, Norm Cool, Dave Cuthiell, Loney and Lynne Dickson, Dave Dodge, Dana Dolson, Jim Faragini, Dave Gilbride, Geoff Holroyd (co-compiler-Canadian Wildlife Service, 2nd floor, 4999-98 Ave., Edmonton, T6B 2X3), Jim Lange, Pat Marklevitz, Ross MacDonald, Chel MacDonald, Gerry McKeating, Jennie Monson, Owen Prince, Margot Pybus, Mike Quinn, David Van Seeters, Ken Smith, Ken Walker, Joan Williams (Friends of Elk Island Society).

Erskine

Erskine, Alta; 52⁰14'N 112⁰59'W, center NW 32-37-21-W4; 9.5 km S and 6.5 km W of Erskine. Weather: some cloud. Temp: -6⁰ to +3⁰C. Wind: Calm to light SW. No snow cover. Water frozen.

Fifteen observers, 13 in 6 parties, 2 at feeders. Total party hours 19 (14 hours driving, 5 hours walking) plus 4 hours at feeders; total party km 250 (239 driving, 22 on foot).

In count area count week, but not seen on count day: Ruffed Grouse, Great Horned Owl, Northern Shrike.

Participants: Bertha Clarke, Vel Hainsworth, Vera Hansen, Gladys and Wilf Hewlett, Samantha Kudras, Martha and Ron Kruger, Bea Lohr, Lloyd Lohr (compiler), George and Grace Neill, Helen Shinness, Barbara Smith, Myrtha Weatherly.

Fort McMurray

The count was centered on the Grant MacEwan bridge, which crosses the Athabasca River. Nearly all city areas were covered briefly. Elevations range from 234 to 369 m. January 5, 1986. 08:30 to 16:00 hrs. Weather: a.m. partly cloudy, p.m. mostly clear. Temp: -24⁰ to -18⁰C. Wind: ESE 2-22 kph. Snow cover 15 to 51 cm.

4 observers; total hours 16 (3 on foot, 13 in vehicles); total party km 259 (8 on foot, 251 in vehicles).

In count area count week, but not seen count day: Bohemian Waxwing.

Participants: Brad Arner, John R. and Sherry Gulley (J.R. - compiler), Brian Wylie.

Fort Saskatchewan

December 30, 1985.

7 observers; 5 in 5 parties, plus 2 at feeders.

Particpants: Olvie and Grace Lamoureux, Mr. and Mrs. L. Jacobson, Elmer Thomas, Lucille Horne (compiler), Bob Loeser.

Fort Smith, N.W.T.
The area is bounded by a circle with a 12 km radius from the town of Fort Smith. Only accessible areas south of the Slave River were covered which include mainly the town, airport, dump and the roads and ski trails that lead into Alberta. December 29, 1985. Time: 08:15 to 14:40 hrs. Weather: -8°C. Wind: NE, 10 kph. Overcast. 30 cm snow cover. Open water above and below the rapids. 22 observers in 10 parties. Total party hours 25.75 (22.5 on foot, 3.25 by vehicle). Total party km 140 (63 on foot, 77 by vehicle).
Seen during count period, but not count day: Cedar Waxwing, Pileated Woodpecker, Hairy Woodpecker, Sharp-tailed Grouse, Ruffed Grouse.
Participants: Kevin and Rita Antoniak, Don and Isabel Brannigan, Jim Crowell, Ken and Mary Lynn East, Cormack and Janet Gates, Michael Jones, Jeff Langille, Margaret Lewis, Robert Lewis, Bradley, Greta, Ian and Michael Morrison, Emily and Robert Redhead, Jacques Saquet (compiler), Ian Stalker, Jeff Thompson.

Horseshoe Canyon
51°25'N 112°52'W, center Highway 9 at the point closest to the Horseshoe Canyon overlook. Elevation 687 to 930 m. Habitat coverage as described 1982 AMERICAN BIRDS. December 21, 1985. Cloud cover: A.M. mostly clear, P.M. partly cloudy. Temp: -4° to + 11°C. Wind: W, 8 to 40 kph. Snow cover 0 to 5 cm. Fresh water frozen.
13 observers in 6 parties. Total party hours 58.5 (34.5 on foot, 24 by car); total party km 916 (75 on foot, 841 by car).
Participants: Stuart Alexander, Myrtle Biggs, Doug Collister, Murray Duclos, Brad Edwardh, Louis Guillemette, Michael Hagel, Peter MacFarlane, Jamey Podlubny, Mark and Peter Sherrington, Robert Storms (compiler - Apt. 905, 815 14 Ave. S.W., Calgary, Alta. T2R 0N5), John Thompson (Calgary Field Naturalists' Soc.).

Lethbridge
Location surveyed: Lethbridge urban (3 bird feeders), Henderson Lake, Leth. Research Station, Indian Battle Park, Nature Reserve, Leth. Riverine Park, Sunnyside, Coaldale, Chin Lakes, Taber Provincial Park. December 26, 1986. Cloud cover: mostly clear. Temp: 0° to 1°C Wind: NW, 20 to 50 kph.
22 observers; total party hours 20.5; total party km 179 (31 on foot, 148 by car).
In count area count week, but not seen count day: Snowy Owl, American Robin, Harris' Sparrow, Rosy Finch.
Participants: Shirley Arner, Diana and Mike Axtell, Anne Brown, Elisabeth Brown, Fiona Brown, William Brown Sr., William Brown Jr., Dorothy Clark, Liz Hall, Alice and Frank Harper, Bud and Lois McKillop, Gordan Merrick. Sheila Petherbridge, Doris Rhodes, Alan Roberts, Joyce and Paul Wilkinson, Alan and Diana Young.

Red Deer
Count area included Red Deer, Benalto, Rimbey, Lacombe, Red Lodge Park. December 29, 1985.
28 observers in 14 parties. Total party hours 51; total party km 217 (24 on foot, 193 on car).
In count area count week, but not seen count day: Gray Partridge, Snowy Owl, Short-eared Owl, Snow Bunting.
Participants: Group 1 Tim and Marg Goode, Bryan and Hazel Shantz; Group 2 Michael and Jennifer O'Brien; Group 3 Kerry and Marjorie Wood; Group 4 Ray and Freda Bertram; Group 5 Dorothy and Sandy Murray; Group 6 Margaret and Erling Glabais; Group 7 Joey Sybom and Bob Fisher; Group 8 Minnie Cunningham and Paul Pohlman; Group 9 Jim and Anna Robertson; Group 10 Ken Larsen, Linda Schutz and Maxine O'Riordan; Group 13 Herb and Helen Harris; Group 14 Frank Lind. The count was compiled by Bryan Shantz (Red Deer River Naturalists).

Snake's Head
51°47'N 114°40'W, center at center of Sec. 32, T32N, R5W5. Elevation: 1036 to 1311 m. Habitat coverage as described 1983 AMERICAN BIRDS. December 28, 1985. Cloud cover: A.M. clear; P.M. partly cloudy. Temp: -10° to -5°C. Wind: W to SW, 0 to 16 kph. Snow cover: 15 to 30 cm. Fresh water partly open. Wild food supply excellent.
16 observers, 10-11 in 6-10 parties, 5-6 at feeders. Total party hours 46 (19 on foot, 2 by car) plus 18 at feeders; total party km 739 (39 on foot, 700 by car).
Participants: Stuart Alexander, Doug Collister (3426 Lane Crescent S.W., Calgary, Alta T3E 5X2), Michael Hagel, Farrell Haug, Jamey Podlubny, Peter and Barbara Sherrington, Andrew Slater, John Steeves, Robert Storms, Bil Wilson.

Stettler
Stettler, Alberta; 52°19'N 112°38'W, center NE 3-39-19-W4, 3.5 km E and 1.5 km N on Highway 12, as described 1982. Elevation 825 m. Habitat coverage as described 1983. December 22, 1985. Weather: Clear. Temp: 3° to 4°C, calm. Some old snow banks but no snow cover. Water frozen.
16 observers in 6 parties, 7 at feeders. Total party hours 12.5 (10.25 driven, 2.25 on foot). Total party km 184 (177 driven, 7 on foot).
Participants: Hugh and Nora Charles, George Cochrane, Ernie and Trudie Grafe, Bernice and Lloyd Greenlee, Elmer Gross, Vel Hainsworth, Gladys and Wilf Hewlett, Alide Hrycyk, Gary Hughes, Lawrence Kennedy, Eva Kirtley, Martha and Ron Kruger, Lloyd Lohr (compiler), George and Grace Neill, Helen Shinness, Barbara and Stewart Smith.

Wabamun Lake
December 29, 1985. Partially cloudy with intermittent rain. Temp: -4° to + 7°C. More open water than for any previous count.
14 observers in 9 parties. Total party hours 49 (19 on foot, 29 by car, 1 by kayak), plus 3 hours at feeders, 1 hour owling. Total party km 346.5 (14 on foot, 330.5 by car, 1 by kayak, 1 owling).
Compiler: Chel MacDonald, 16108 88A Ave., Edmonton, T5R 4N6.

Waterton Lakes
Location surveyed: Townsite, Bertha Lake Trail, Cameron Rd., Cameron Lake, Red Rock Rd., Red Rock Fire Rd., Sofa Trail, Crandel campground, Rd. to Belly River, Waterton flats and river. Cloud cover: Clear. Temp: -5° to 0°C. Wind: SW, strong. January 4, 1986. 20 observers. Party hours 26; party km 171 (18 on foot, 137 by car, 16 by skis).

In count area count week, but not seen count day: Spruce Grouse, Downy Woodpecker.
Participants: William Brown Jr., Doug and Teresa Dolman, Ada Greenlee, Edith Greenlee, Graeme Greenlee, Pat Greenlee, Valerie Greenlee, Betty Haig, Janice Jellicoe, Bud McKillop, Bruce McKillop, Lois McKillop, Simon Lunn, Michael O'Shea, Doris Rhodes, Gordon Ross, Shirley Shaw, Barb and Mike Vandyk.

Wembley
Places surveyed: Bear Creek Valley in Grande Prairie, Lake Saskatoon to Goodfare, Rio Grande, Beaverlodge, Wembley, Cutbank River. December 22, 1985. Cloud cover: approx. 30%; no snow. Temp: 5° to 8°C. Wind: SW, 30 to 40 kph.
4 observers in 2 parties. Total party km 377 (17 on foot, 360 by car).
Participants: Glen Rogers, Mel Boe, Gavin and Ellen Craig (compiler).

Wildlife Reserve
Wildlife Reserve of Western Canada, 51°26'N 114°35'W, center SW corner Sec. 36 T28N R5W5, includes Bottrel, Water Valley, the Wildlife Reserve of W. Can. and stretches of the Little Red Deer River. Elevation 1135 to 1524 m. Habitat coverage: Wooded upland and edge 55%, wooded creek and riverbottom 30%, brushy range 9%, open farmland 5%, farmyard 1%. January 4, 1986. 8 A.M. to 6 P.M. A.M.: clear. P.M.: clear. Temp: -15° to +2°C. Wind: SSW 0-11 kph. Snow cover 0 to 16 cm. Water partly open. Wild food crop good, excellent spruce cone crop.
42 observers in 17-25 parties, 0-1 at feeders. Total party hours 143 (89 on foot, 54 by car) plus 3 hours at feeders. Total party km 1323 (192 on foot, 1131 by car).
Participants: Stuart Alexander, Desmond Allen, Donna and Paul Anderson, Reid Barclay, Doug Collister, Ross Dickson, Olga Droppo, Murray Duclos, Wladimir Franco-Valias, Elizabeth Gibb, Louis Guillemette, Michael Hagel, Dorothy Hazlett, Dorothy Hill, Stewart Holohan, Grace Hugo, Clay Hunt, Karen Johnson, Kate Jones, Peter Kennedy, Jean Maudsley, Jean McCullough, John McFaul, Kay Morck, Barry Murray, James Podlubny (compiler - 4520 Bulyea Rd. Calgary, AB T2L 2H3), Barbara, Ian, Mark and Peter Sherrington, Gwen Simpson, Wayne Smith, Jack and Marion Steeves, Don Stiles, Robert Storms, John Thompson, Cleve, Merrill and Ray Wershler, Ray Woods.

Author's Address:
152 Oakside Circle S.W., Calgary, Alberta T2V 4H2.

Corrections to Alberta Christmas Bird Count, 1984

- *Alberta Naturalist* Vol. 15, No. 3
1. In the text, the number of species on the Calgary count was shown as 53. This should have been 56 as shown in the table, equalling the previous provincial record.
2. In the table, the figures for the Green-winged Teal should read: Banff/Canmore 2; Calgary 2; total 4.

Observations of Two Cougars in Waterton Lakes National Park

Keith McDougall

A typical grey dismal Waterton morning greeted me on my brief walk to work at the park naturalist's office. I was thankful though, that Waterton's infamous blasting winds were quite calm and it was not snowing. After about five minutes at my desk contemplating another day of paper work, Simon Lunn, the assistant chief park naturalist came in with some interesting news. On his way to work he had seen two cougars!

He suggested that Janice Jellicoe, another park naturalist, and myself should go to where he saw the cats and perhaps we might catch a glimpse of them. He had spotted the two cougars crossing the road and entering a small bluff of trees, bordered on two sides by roads and by the Prince of Wales Hotel and its staff accommodation. Arriving at the sighting location, we stopped, got out of the car and almost immediately saw two young cougars (young of the previous year) bound out of a small clearing in a group of trees and disappear upslope. We spent a few more minutes observing but did not see the cougars again.

We then left. I dropped Janice off at the Park office and headed back to my office. Driving slowly past the cougar sighting spot, my attention was caught by several magpies. Leaving the car to investigate, I could see quite a few magpies scattered through the trees. I noticed one in particular as it flew onto a low branch right next to the clearing where we had seen the cougars. It then flew onto the ground below. In a flurry of activity, a cougar charged into the clearing, leapt into the air in an attempt to grab the magpie, then rushed around in a very agitated fashion for several seconds. During this time its ears were laid back and it rushed at several other trees leaping up towards any perching magpies.

Once the magpies had all retreated to more secure branches, the cougar returned to the grassy clearing and, like a giant kitty in a box of litter, began to shovel snow over some object. Looking through binoculars I could see some blood and clumps of fur sticking up through the snow.

After assuring itself it had done a thorough burying job, the cougar settled down on top of its kill. It remained there for about ten minutes, looking quite contented and peaceful. It then got up and vanished upslope into the trees and shrubs above the clearing.

Within five minutes of the cougar's leaving, the magpies again began to move towards the kill site. However, as soon as one moved onto the lower branches of the tree nearest the kill site, the cougar immediately charged down from its hidden watching place and once again rushed around in an agitated fashion until the magpies were put at a respectful distance. It then buried the kill some more and once again settled down on top of it.

At this point I returned to the office. However, I returned to the site several times during the day and saw the same cycle as before: magpies, agitated cougar, burying kill, sitting on kill, disappearing upslope, returning to chase magpies. Only a single cougar was observed throughout the day.

All of this action occurred about 75 m from the road and at various times as many as 20 people were observing the cougar, which seemed to be entirely indifferent. The only time I saw it become alarmed was when it leapt up in fright when a snow plow, its blade grinding along the ground, went by.

The cougar was still on site as dusk fell, but no cougars were seen in the area of the kill in the following days. Later investigation showed the kill to be a young mule deer.

Author's Address:
Waterton Lakes National Park, Waterton Lakes, Alberta T0K 2M0.

Mallard Attacks Ring-billed Gull

Richard Carmel

On July 1, 1986, at Allan Beach, I was feeding a Mallard duck and her brood, hoping that they would come close enough for me to take their picture. When I threw a bun into the water, a Ring-billed Gull swooped down to take the bread between the duck and one of the ducklings. Immediately, the mother duck attacked the gull, pulling at its feathers and climbing on its back. The gull sank several times. After the struggle, it floated back up to the surface with its wings spread. The duck continued to pluck the gull's feathers from the underside of the wings, until she finally left it alone.

The gull attempted to fly but could not. It swam to the dock near where I was standing and climbed on. It was bleeding from the side of the bill and from under its wings. There seemed to be very few feathers left on the underside of the wings.

I attempted to feed the gull, but it entered the water and swam into the reeds. The next day, I saw it trying to fly and I noticed there was still dried blood around its bill.

Author's Address:
109 Garnet Crescent, Sherwood Park, Alberta T8A 2S3.

First Authenticated Record of Common Poorwill in the Calgary Area

Harold W. Pinel[1] and John R. Riddell[2]

In Alberta, the Common Poorwill has been recorded regularly only in the Cypress Hills. Outside of the Cypress Hills, there is only one other authenticated record, that of a bird found in a weakened condition near Lindbergh on October 22, 1971. This bird was kept alive until July 12, 1972, when it was released at Vernon, British Columbia (Goulden 1972). There is also a sight record of a single bird observed near Cheadle, Alberta, by Tom Sadler on August 30, 1969 (Sadler and Myres 1976).

On May 31, 1986, at approximately 1600 hours, a Common Poorwill flew into a Midas Muffler Shop on 32 Street in northeast Calgary. The bird injured its wings as it flew around the shop. Staff at the Muffler Shop picked up the bird and took it to the Inglewood Bird Sanctuary, who took it to the Calgary Zoo.

At the Zoo, the poorwill was diagnosed to have fractured the distal radius and ulna in its right wing and dislocated the elbow joint of its left wing. The bird weighed 42.2 grams. The wings were treated with support bandages, and the bird was tube-fed a 5% dextrose solution. The poorwill was very weak and non-responsive to care. The prognosis was poor, so euthanasia was elected.

The specimen was sent to the University of Calgary Museum of Zoology, where it has been prepared as a freeze-dried study skin, numbered UCMZ (AV) 1986.8.

Literature Cited

Goulden, L.L. 1972. Notes on a Captive Poor-will in Alberta. Blue Jay 30(4): 222-225.

Sadler, T.S. and M.T. Myres. 1976. Alberta Birds 1961-1970. Prov. Museum of Alberta Nat. History Section, Occasional Paper No. 1, 314 pp.

Salt, W.R. and J.R. Salt. 1976. The Birds of Alberta. Hurtig Publishers, Edmonton. 498 pp.

Authors' Addresses:
1. 1017-19 Ave. N.W., Calgary, Alberta T2M 0Z8.
2. 3033-1 St. S.W., Calgary, Alberta T2S 1P7.

Age Specific Mortality Associated with Native Hunting of Bison

Bob Gainer

Several reasons have been given for the decline in numbers of the bison in Wood Buffalo National Park. These include the presence of several diseases, native hunting, and habitat change (Tessaro 1986). A notable feature of the population's life table is its extremely high proportion of older animals. Calves and yearlings especially are lacking. One reason Tessaro gives for this is the reduction in fertility associated with brucellosis.

Recently, an autopsy I performed for the Park on a poached buffalo gave me reason to believe another factor may account for the lack of calves and yearlings in the population. The animal I autopsied was a mature bull. It had been shot three times from a range of 50 m with a 180 grain soft-nosed .303 bullet. Two of the bullets hit the animal in the chest and the third hit the animal's trachea. Although the two chest shots were at close range, one failed to penetrate the rib cage and the other penetrated just barely. Their damage was minimal. The third shot clipped the animal's trachea and resulted in the animal drowning in its own froth.

What the autopsy illustrated to me was that the rifles most natives use are incapable of killing bison larger than calves and yearlings, except for stray shots hitting sensitive spots like the trachea. It is often said that natives prefer younger animals for the pot, but a survey of the ammunition sold to the natives in northern Alberta shows that approximately 95% is 30-30 caliber, which would be even less effective for potting bison than the .303 used on the bison I autopsied. A 30-30 at 100 m range would probably be adequate to kill fall and winter calves, but would require a well-placed shot for most yearlings. For older animals, a very lucky shot would be needed, especially when considering the armour-like hide such as that of the mature male bison examined.

Van Camp (1985) found native hunting of bison in the Slave River lowland area to be quite significant. Besides quantity, the effect on recruitment into the herd would be additionally important.

Literature Cited

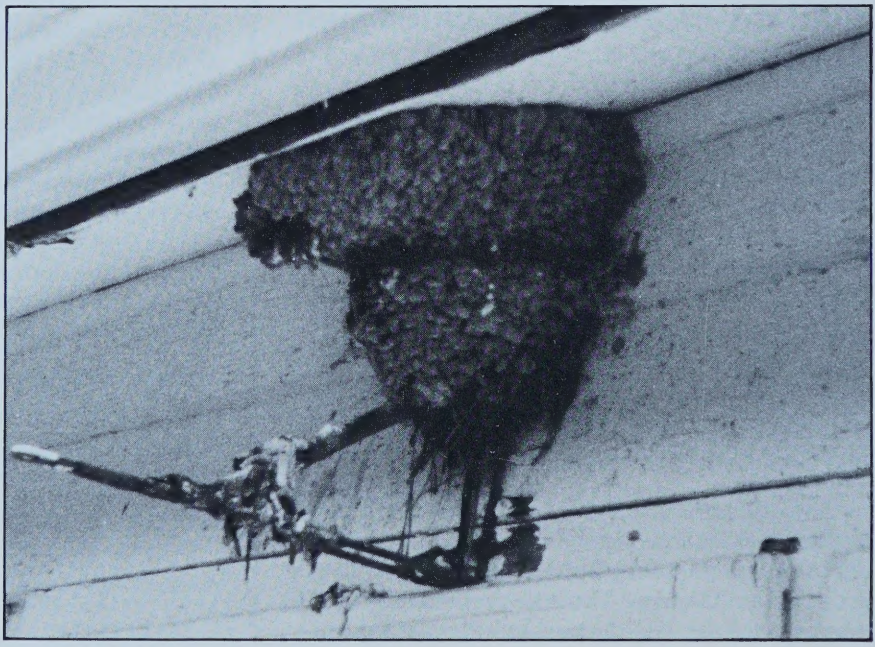
Tessaro, S.V. 1986. The existing and potential importance of brucellosis and tuberculosis in Canadian wildlife: A review. Can. Vet. J. 27:119-124.

Van Camp, J. 1985. Predation on bison. In: Bison ecology as it relates to the potential for production of bison, cattle, or domestic crops in the Slave River lowlands, N.W.T. Canada. Edited by H.W. Reynolds and A.W.C. Hawley. CWS Technical Report, 191 pp.

Author's Address:
Box 1313, Fort Smith, N.W.T. X0E 0P0.

Swallow Duplex?

The picture at right was sent to us by Eva Kirtley (Box 1082, Stettler, Alberta T0C 2L0). She writes that the lower part of this double structure has been used by Barn Swallows for the past three years. In 1986, after the young had fledged, a pair of Cliff Swallows built their nest on top of the Barn Swallow's cup. The "duplex" is located under the eavestrough over the kitchen window, facing west.



NATURALISTS BOOKSHELF

Red Fox. The Catlike Canine.

J. David Henry. 1986. Smithsonian Institution Press. Washington, D.C. 174 pp. Hard cover. $22.50 (U.S.)

Natural history books that are based on the author's personal field observations are usually worth reading, especially if the subject is as appealing as the Red Fox, and if the author is a perceptive ethologist such as David Henry.

Henry obtained his Ph.D. from the University of Calgary for his research on the behaviour of Red Foxes in Prince Albert National Park, Saskatchewan. He now lives in a tiny settlement near the park, surrounded by boreal forest, quite a different setting from his hometown of Chicago. He is a past-president of the Canadian Parks and Wilderness Society and he was particularly active in the long struggle to establish Canada's first and only grasslands national park.

This very readable little book details Henry's field observations on the fox's hunting and caching behaviour. He discovered that the foxes used urine marking in an effective "book-keeping" system that saved time in the investigation of empty caches that still held the smell of residual food but contained nothing edible. The chapter titled "Evolving a Better Mousetrap" is quite brilliant and explores the fox's record-breaking ability to pounce, the major hunting technique for small rodents. In a section called "Evolving the Catlike Canid" the author looks at the morphological features that foxes share with small cats, such as long whiskers, dagger-like teeth, and vertical-slit pupils. He hypothesizes that it is a case of convergent evolution of two kinds of predators that hunt similar prey species.

The cat-like aspects of the fox's physique and behaviour prompted the book's inaccurate subtitle: "The Catlike Canine". Of course, a *canine* is a tooth, and *canid* is the correct term for a member of the dog family. Quite apart from this unfortunate misnomer, the title is weak, for it seems to suggest that this a handbook on foxes, which it is not.

The publishers/producers made other regrettable choices, that may bother me more than most readers because of my background as a graphic designer. The colour photo on the book's jacket doesn't show the fox at its photogenic best. The animal lies stretched out, head and chest on the front cover, its hindquarters over the spine and on the back cover. Inside, ten colour photos are

Red Foxes are very tolerant of humans near Waskesiu, Prince Albert National Park. Photo: J.D. Henry

clustered in a glossy-paper insert, but the attractiveness of 33 black-and-white pictures, scattered throughout the book, has suffered because they are printed on uncoated paper and they are not well-placed on the page. The designers really goofed by reducing the 12 pencil drawings to such a degree that the fine lines disintegrate.

The book is well-written, although the occasional fatuous phrase has escaped the editors. For instance: the fox "periodically rotates her head around the axis of her neck."

I have a few other minor comments and concerns. To denote the male of the species, Henry sometimes uses the term "dog fox", often employed by other writers too, but I find it inappropriate. The book includes an awkward 12-page appendix of "Notes" that support statements made in the chapters, or refer to the published findings of others. I guess that I am like most authors in feeling flattered when my publications are acknowledged. Henry cites my papers in the Canadian Field-Naturalist (97:303-306) and the Alberta Naturalist (6:65-67) in reference to high pup mortality and competition with coyotes, but he does not mention my more unusual observations. During a vole irruption on fields near Edmonton, I saw more rodents caught in a day than Henry in years of watching in the forest.

From tracks in snow in my Tofield study area, I had deduced that foxes also use passive hunting strategies such as lying up near well-used rodent runs or ground squirrel burrows, apparently to wait for prey. Henry actually saw his foxes perform such "nap and capture" tricks, and he wonders "how much understanding of its prey the fox carries around in its head." Of course, waiting for prey in places where it is likely to turn up is common among mammalian predators as well as raptorial birds. An "understanding" of mice and small birds, of their habits and hangouts, comes naturally to a city cat, let alone to a finely-tuned fox.

In his foreword to the book, Donald Griffin writes that the question of whether animals such as foxes "experience subjective feelings and thoughts of some sort" has been taboo in the scientific community, but "this viewpoint seems to be based more on intellectual aversion on the part of the scientist than on objective evidence."

The question of whether foxes "think" may never be resolved by science, but the answer should be plain to anyone who watches them with as much care and empathy as David Henry.

Dick Dekker

The Status of Ecological Reserves in Canada

P.M. Taschereau. 1985. Published by the Canadian Council on Ecological Areas and the Institute for Resource and Environmental Studies, Dalhousie University. 120 pp. $8.00 (available from IRES, 1312 Robie Street, HALIFAX, B3M 3E2).

Initially, this book will probably appeal only to a very limited audience. That's a shame! The book is timely, well-researched and organized, meaty, comprehensive and has broad applicability. Its initial limited appeal is for a couple of very superficial reasons. Firstly, the concept of ecological reserves is not well understood, even by many conservationists. Consequently, the title will not immediately attract wide attention to the book. Secondly, the table of contents is formidable. There are 84 headings and subheadings in the table of contents for what is essentially only 88 pages of real text.

This is in no way, however, a criticism of the book. I like the table of contents. It greatly increases the value of the book as a reference tool. It also reflects the author's organization and thoroughness. In fact, the detailed table of contents is almost essential in helping the reader through the myriad of agencies, jurisdictions and programs of both government and private organizations. When reading the text, I had to keep my thumb on the table of contents so that I could refer to it often to keep my perspective.

Why does a book like this have to be written anyway? Who the heck wants to know about MAB, ACER, DINA etc., etc., and the convoluted history and infrastructures related to just another conservation effort. What could be simpler than the concept of an ecological reserve - a legally protected natural area where human influence is kept to a minimum?

Yet we in Alberta know the concept is far from simple and unemotional. After years of the ecological reserve concept floating around, legislation was finally passed in Alberta in 1982. The first public meeting for the first proposed ecological reserve at Milk River was held in Lethbridge in 1984. So hot were the tempers at this meeting that one local rancher accused a spokesman for Alberta's naturalist groups of being a Trotskyite and, gesturing with his first to a conservationist, suggested settling differences outside. In his comment, that rancher pointed out that ecological reserves were part of a UNESCO scheme and that since the United States had withdrawn its funding from that international body, essentially the Milk River area would come under Soviet influence.

Dr. Taschereau's book will allay any fears of a communist take-over plot. Although I'm not paranoid, my theory is that this book's message reflects The Plot that exists to keep conservationists busy while the born-again buccaneers continue the assault on our natural heritage. The best way I know of to slow up any conservation initiative is to divide up the responsibilities, initiate studies and pile on the committees. Dr. Taschereau's history of ecological reserves across Canada is certainly a triumphant example of this! Even though this book is objectively written, to the author's credit, the reader can only interpet it as an indictment of where Canadian society is and how far, or not so far, we've come in the protection of our natural heritage.

The author's objective style is important for a book like this. You know you're getting the facts, and all of the facts. There's nothing novelistic or anecdotal about his book. Yet it is not without some heart. The last section of the book titled "Envoi" and the last sentence, "Wild areas do have all the values stated by scientists, conservationists and writers, but more than that, they have a value in themselves", reflect the author's personal feelings for the topic.

When it comes to conservation, we all know that feelings are not enough. We need to be informed so that we can become productively involved in promoting our cause. Knowledge is power. Dr. Taschereau's book gives us a lot of good solid information.

Peter Lee

Recent Publications on the Natural History of Alberta

Compiled by David M. Ealey and Martin K. McNicholl

Natural History Observations

Holroyd, G. 1986. Great grebe tour - a great success. Edmonton Naturalist 14(2):16.

Quinn, M. 1986. Nature notes from Beaverhill Lake. Edmonton Naturalist 14(2):14-15.

Geology

Beaudoin, A.B. and R.H. King. 1986. Using discriminant function analysis to identify Holocene tephras based on magnetite composition: a case study from the Sunwapta Pass area, Jasper National Park. Can. J. Earth Sci. 23(6):804-812.

Cruden, D.M. 1985. Rock slope movements in the Canadian Cordillera. Can. Geotech. J. 22(4):528-540.

Irving, E., P.J. Wynne, M.E. Evans, and W. Gough. 1986. Anomalous paleomagnetism of the Crowsnest Formation of the Rocky Mountains. Can. J. Earth Sci. 23(5):591-598.

Kalkreuth, W. and C.W. Langenberg. 1986. The timing of coalification in relation to structural events in the Grande Cache area, Alberta, Canada. Can. J. Earth Sci. 23(8):1103-1116.

Soils

Bole, J.B. 1986. Amelioration of a calcareous Solonetzic soil by irrigation, deep ripping, and acidification with elemental sulfur. Can. J. Soil Sci. 66:347-356.

Bole, J.B. and W.D. Gould. 1986. Overwinter losses of nitrogen - 15 labelled urea fertilizer. Can. J. Soil Sci. 66(3):513-520.

Buckland, G.D., D.B. Harker, and T.G. Sommerfeldt. 1986. Comparison of methods for determining saturated hydraulic conductivity and drainable porosity of two southern Alberta soils. Can. J. Soil Sci. 66(2):249-259.

Buckland, G.D., D.B. Harker, and T.G. Sommerfeldt. 1986. The influence of drain depth on the rate of soil reclamation in irrigated areas of southern Alberta. Can. J. Soil Sci. 66(3): 531-535.

Chang, C., T.G. Sommerfeldt, G.B. Schaalje, and C.J. Palmer. 1986. Effect of subsoiling on wheat yield and salt distribution of a Solonetzic soil. Can. J. Soil Sci. 66(3):437-443.

Dormaar, J.F., C.W. Lindwall, and G.C. Kozub. 1986. Restoring productivity to an artificially eroded Dark Brown Chernozemic soil under dryland conditions. Can. J. Soil Sci. 66(2):273-285.

Dormaar, J.F. and T.G. Sommerfeldt. 1986. Effect of excess feedlot manure on chemical consituents of soil under nonirrigated and irrigated management. Can. J. Soil Sci. 66(2):303-313.

Goh, T.B., S. Pawluk, and M.J. Dudas. 1986. Adsorption and release of phosphate in Chernozemic and Solodized Solonetzic soils. Can. J. Soil Sci. 66(3):521-529.

Malhi, S.S. and M. Nyborg. 1986. Increase in mineral N in soils during winter and loss of mineral N during early spring in north-central Alberta. Can. J. Soil Sci. 66(3):397-409.

McGill, W.B., K.R. Cannon, J.A. Robertson, and F.D. Cook. 1986. Dynamics of soil microbial biomass and water soluble organic C in Breton L after 50 years of cropping and two rotations. Can. J. Soil Sci. 66(1):1-19.

Mitchell, M.J., M.B. David, D.G. Maynard, and S.A. Telang. 1986. Sulfur constituents in soils and streams of a watershed in the Rocky Mountains of Alberta. Can. J. For. Res. 16(2):315-320.

Monreal, C., W.B. McGill, and M. Nyborg. 1986. Spatial heterogeneity of substrates: effects on hydrolysis, immobilization and nitrification of urea - N. Can. J. Soil Sci. 66(3):499-511.

Nyborg, M. and S.S. Malhi. 1986. Comparison of fall and spring application of nitrogen fertilizers in northern and central Alberta. Can. J. Soil Sci. 66(2):225-236.

Pawluk, S. 1986. Vegetation and management effects upon some properties of Black Chernozemic soils of the Edmonton region. Can. J. Soil Sci. 66(1):73-89.

Webster, G.R. and M. Nyborg. 1986. Effects of tillage and amendments on yields and selected soil properties of two Solonetzic soils. Can. J. Soil Sci. 66(3):455-470.

Paleontology

Turner, R.E. 1986. New and revised acritarch taxa from the Upper Devonian (Frasnian) of Alberta, Canada. Can. J. Earth Sci. 23(5):599-607.

Non-vascular Plants

Boyetchko, S.M. and J.P. Tewari. 1986. A new species of *Glomus* (Endogonaceae, Zygomycotina) mycorrhizal with barley in Alberta. Can. J. Bot. 64(1):90-95.

Vascular Plants

Argus, G.W. 1986. Studies of the *Salix lucida* and *Salix reticulata* complexes in North America. Can. J. Bot. 64(3):541-551.

Catling, P.M. and W. Wojtas. 1986. The waterweeds (*Elodea* and *Egeria,* Hydrocharitaceae) in Canada. Can. J. Bot. 64(8):1525-1541.

Harms, V.L. 1986. The Yellow Lady's-slipper varieties in Saskatchewan and western Canada. Blue Jay 44(2):87-95.

Harms, V.L., J.H. Hudson, and G.F. Ledingham. 1986. *Rorippa truncata,* the Blunt-fruited Yellow Cress, new for Canada, and *R. tenerrima,* the Slender Yellow Cress, in southern Saskatchewan and Alberta. Can Field-Nat. 100(1):45-51.

Les, D.H. 1986. The phytogeography of *Ceratophyllum demersum* and *C. echinatum* (Ceratophyllaceae) in glaciated North America. Can. J. Bot. 64:498-509.

Van Hulst, R., A. Theriault, and B. Shipley. 1986. The systematic position of the genus *Rhinanthus* (Scrophulariaceae) in North America. Can. J. Bot. 64(7):1443-1449.

Trees

Bradley, C.E. and D.G. Smith. 1986. Plains cottonwood recruitment and survival on a prairie meandering river floodplain,Milk River, southern Alberta and northern Montana. Can. J. Bot. 64(7):1433-1442.

Chrosciewicz, Z. 1986. Foliar heat content variations in four coniferous tree species of central Alberta. Can. J. For. Res. 16(1):152-157.

Chrosciewicz, Z. 1986. Foliar moisture content variations in four coniferous tree species of central Alberta. Can. J. For. Res. 16(1):157-162.

Fyles, J.W., G.H. LaRoi, and R.A. Ellis. 1986. Litter production in *Pinus banksiana* dominated stands in northern Alberta. Can. J. For. Res. 16(4):772-777.

Pielou, E.C., J.S. Campbell, and V.J. Lieffers. 1986. Comparison of the structures of even-aged aspen stands in three geographic regions. Can. J. Bot. 64(1):122-129.

Rood, S.B., J.S. Campbell, and T. Despins. 1986. Natural poplar hybrids from southern Alberta. I. Continuous variation for foliar characteristics. Can. J. Bot. 64(7):1382-1388.

Invertebrates

Dondale, C.D. and J.H. Redner. 1986. The *Coloradensis, Xerampelina, Lapponica,* and *Tesquorum* groups of the genus *Pardosa* (Araneae: Lycosidae) in North America. Can. Ent. 118(8):815-835.

Kralka, R.A. 1986. Population characteristics of terrestrial gastropods in boreal forest habitats. Amer. Midl. Nat. 115(1):156-164.

Birds

Duncan, D.C. 1986. Survival of dabbling duck broods on prairie impoundments in southeastern Alberta. Can. Field-Nat. 100(1):110-113.

Harris, W.C. 1986. The winter season. December 1, 1985-February 28, 1986. Prairie Provinces Region. Amer. Birds 40(2):293-295.

Hochachka, W.M. and C.S. Scharf. 1986. Black-billed Magpie, *Pica pica,* predation on bats. Can. Field-Nat. 100(1):121-122.

Sampson, R. 1986. Observation of an albino Black-billed Magpie. Edmonton Naturalist 14(2):9.

Smith, A.M. (ed). 1984. Canada 1983. Report of Royal Air Force Ornithological Society. - Birds at Suffield Military Reserve, and Waterton Lakes National Park.

Tate, J., Jr. 1986. The Blue List for 1986. Amer. Birds 40(2):227-236.

Mammals

MacArthur, R.A., V. Geist, and R.H. Johnston. 1986. Cardiac responses of Bighorn Sheep to trapping and radio instrumentation. Can. J. Zool. 64(5):1197-1200.

Quinn, M. 1986. Natures waddling pin-cushion. Edmonton Naturalist 14(2):8-9.

Waterman, J.M. 1986. Behaviour and use of space by juvenile Columbian Ground Squirrels. Can. J. Zool. 64(5):1121-1127.

Environmental Education

Holroyd, G. 1986. Beaverhill Nature Centre. Edmonton Naturalist 14(2):15-16.

Development/Environmental Problems

Pielou, E.C. 1986. Assessing the diversity and composition of restored vegetation. Can. J. Bot. 64(7): 1344-1348.

Russell, W.B. and G.H. LaRoi. 1986. Natural vegetation and ecology of abandoned coal-mined land, Rocky Mountain Foothills, Alberta, Canada. Can. J. Bot. 64(7):1286-1298.

APR 1 0 1987

ALBERTA NATURALIST

Volume 17, Number 1, Spring 1987.

For Reference
Not to be taken from the Library
CAMROSE LUTHERAN COLLEGE
LIBRARY

Red Squirrel.

Photo: Jim R. Salt

ALBERTA NATURALIST
Volume 17, Number 1, April 1987.
Published quarterly by the Federation of Alberta Naturalists
Box 1472, Edmonton, Alberta T5J 2N5

CONTENTS

A Botanically Interesting Peatland in North-Central Alberta.
J. Derek Johnson 1

Where Are the Alberta-Released Peregrines?
R. Wayne Nelson 4

Results of the 1986 May Species Count-Plants in Flower.
J. Derek Johnson 10

An Unintentional Bird Snare.
J. Derek Johnson 15

Bird Longevity Records.
Edgar T. Jones 15

Novel Bird Species to Look For in Alberta.
J. Derek Johnson 15

Red Squirrel Harasses Sharp-shinned Hawk.
Jack L. Park 16

The Elusive White-winged Crossbill.
Dale Stelter 16

F.A.N. News, Club News, Announcements 17

Recent Publications on Alberta Natural History 35

The Alberta Naturalist is published quarterly by the Federation of Alberta Naturalists. Special issues may be published from time to time. Any material printed for the first time in the AN may be reproduced without permission; credit lines will be appreciated. All opinions expressed are those of the authors concerned and, except where stated, do not represent official F.A.N. policy.

ADVICE TO CONTRIBUTORS

Items for publication should be addressed to the Editor at the address below. Deadlines for submission of material for regular issues are: January 1, April 1, July 1, and October 1. All material submitted for publication must be typed, double-spaced, preferably on 8½"x11" paper. Maps, charts, and graphs should be submitted in "camera-ready" form if possible. Photographs accompanying an article should be submitted in the form of black and white prints on glossy paper. (Prints can be made from supplied colour slides or negatives if necessary.) Illustrative material will be returned on request. The author's name and a complete mailing address must be provided with the submission of material. Contributors should be aware that articles of a technical nature and those involving the sightings of rare species, range extensions, out of season records, etc. may be sent out for peer review. A complimentary copy of the issue in which a submission appears will be sent to authors. Information on advertising rates may be obtained from the Editor at the FAN Box No.

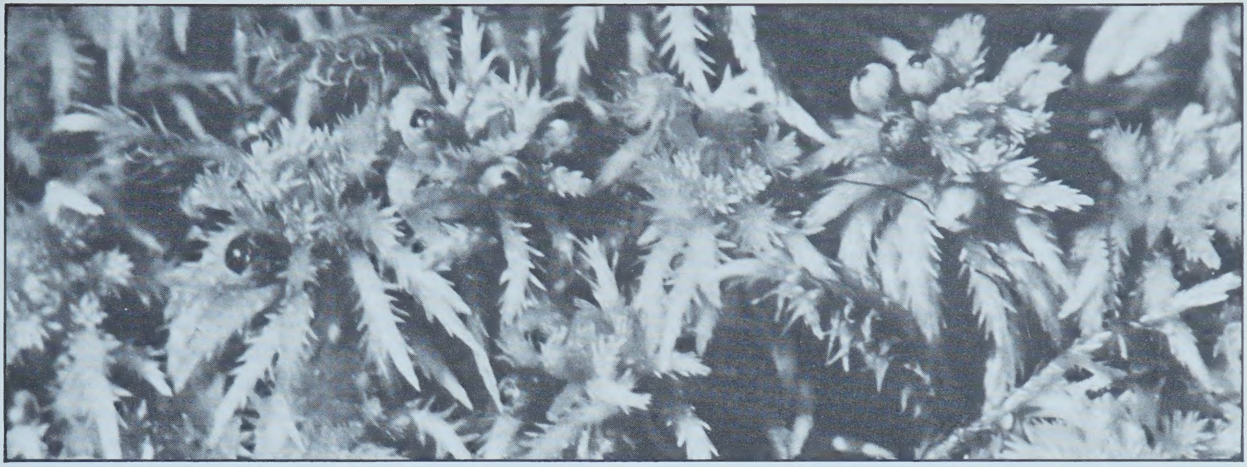
DEADLINES for FAN project reports are: *Alberta Christmas Bird Counts,* January 30, Andrew Slater, 152 Oakside Circle S.W., Calgary, AB. T2V 4H2; *May Species Count - Plants,* July 15, J. Derek Johnson, Northern Forestry Centre, 5320 - 122 St., Edmonton, AB. T6H 3S5; *May Species Count - Birds and Mammals,* July 15, Al Wiseley, 202 - 635 - 56 Ave. S.W., Calgary, AB. T2V 0G9. Compiler cooperation is greatly appreciated.

Editor: Derek Johnson,
7109 - 106 St., Edmonton, Alberta T6E 4V5.
Telephones: 436-8231 home, 435-7306 work.
Assistant Editors: Dick Dekker, David M. Ealey

Typesetting: Typeplus Typographers Ltd.
Graphic Design and assembly: Dick Dekker
Printing: Europe Offset Ltd.

The costs of printing the Alberta Naturalist are partially supported by grant funds through the Periodical Publication Assistance program of Alberta Culture. The Federation of Alberta Naturalists gratefully acknowledges this support.

ISSN 0318-5440. Postage paid at Edmonton, Alberta under Second Class Mail Registration No. 3604.



Sphagnum squarrosum, *a predominantly woodland species of peat moss, is distinguished by its abruptly narrowed branch leaves spreading at right angles from the stem. Note the capsules.* Photo: J.D. Johnson

A Botanically Interesting Peatland in North-Central Alberta

J. Derek Johnson

As part of a five-year cooperative program between the federal and provincial governments, a study was initiated in 1985 to determine the value of drainage in improving tree growth on certain peatlands in Alberta. One of the three sites selected for study (referred to as the Goose River site) is located off the northwest end of the Swan Hills, immediately south and west of Sweathouse Fire Tower, 38 km southeast of Valleyview. The peatland covers an area of approximately 500 ha centered on 13-68-19-W5 (54º54'N, 116º45'W; elevation 850 m). During the course of research in the area it became evident that it was more interesting botanically than many of the other peatlands we have sampled in Alberta. A number of species on the Rare Vascular Plants list for Alberta (Packer and Bradley 1984) were encountered and several other species that are uncommon in other parts of Alberta were abundant in certain areas of this peatland.

Nomenclature in this note follows Moss (1983) for the vascular plants, Ireland *et al.* (1980) for the mosses, Stotler and Crandall-Stotler (1977) for the liverworts, and Hale and Culberson (1970) for the lichens.

The majority of the Goose River site can be classified as a coniferous swamp (Zoltai *et al.* 1973) dominated by Black Spruce (*Picea mariana*). Common Labrador Tea (*Ledum groenlandicum*) has high cover and is the dominant understory shrub. The herb stratum is dominated by Three-seeded Sedge (*Carex trisperma*), Common Horsetail (*Equisetum arvense*), Woodland Horsetail (*E. sylvaticum*), and Bog Cranberry (*Vaccinium vitis-idaea*), with lesser amounts of Cloudberry (*Rubus chamaemorus*). Northern Reed Grass (*Calamagrostis inexpansa*) and Small Bog Cranberry (*Oxycoccus microcarpus*) are constant species, but have generally low cover. *Sphagnum angustifolium* and *S. magellanicum* are the predominant mosses in the wetter areas; *S. fuscum* and *Pleurozium schreberi* predominate in the drier areas. A few patches of Reindeer Lichen (*Cladina mitis*) occur in more open, drier and elevated areas.

An area which might best be classified as a nutrient-poor treed fen covers part of the southeastern portion of the site. In appearance this area looks like what most people would consider to be a "bog", but closer examination reveals a number of things which indicate otherwise. While the area is dominated by Black Spruce and *Sphagnum,* species such as Tamarack (*Larix laricina*), Dwarf Birch (*Betula pumila*), Bog Rosemary (*Andromeda polifolia*), and sedges (*Carex* spp.), species more indicative of fens, are widely evident in the cover. Chemical analysis of water and peat samples from this area shows higher nutrient levels (specifically calcium and magnesium) than the general limits given for bogs.

Such areas of "poor fens" are particularly interesting as they are not a common peatland type in Alberta.

The entire peatland is poorly to very poorly drained with the water table at or near the surface for the majority of the year. The average depth of peat from 13 sampled locations is 74 cm, but depths approaching 2 m occur in the southeastern portion of the area. The majority of this peatland has been burned within the last 75 years and most of the Black Spruce trees currently present are in the 40 to 50 year-old range. However, there are areas that have escaped fires for some time which have stands of nearly closed-canopy Black Spruce approaching 150 years old and 15 m in height. Because of the strong shading in these stands the understory vegetation is very poor, consisting predominantly of feather mosses and patches of *Sphagnum*, with widely scattered sedges.

Although this peatland is not terribly rich in terms of the number of species it contains, it makes up for it with some rather unusual records. Seventy species of vascular plants, 46 species of mosses, 15 species of liverworts, and 12 species of ground-dwelling lichens have been identified from the area thus far.

Almost all the ground-dwelling lichens are in the genera *Cladonia* and *Peltigera.* As might be expected, the wet nature of peatlands precludes the development of a diverse ground lichen flora. Trees provided a much better substrate for lichens is these areas.

In the drier continental climate of the boreal forest, liverworts are generally restricted to the wetter habitats and hence achieve their greatest abundance in areas such as peatlands, particularly in wet depressions and over tree roots and fallen logs. Of the 15 species found in the area none are particularly unusual, although the abundance of some is worthy of note. In certain areas, *Scapania paludicola* and *Barbilophozia kunzeana* form conspicuous patches in wet depressions and over tree roots, respectively.

Ten species of peat moss (*Sphagnum*) have been found in the area. This is remarkable for an area of this size, considering that the total number of species known for all of Alberta is 21 (Vitt and Andrus 1977). One interesting group of mosses is the dung mosses, or Splachnaceae, so called because of their preference (or ability) to grow on the excrement of various animals (herbivore dung; carnivore scats and pellets). Four species in this family were encountered in the study area, *Splachnum luteum, S. sphaericum, Tetraplodon angustatus,* and *T. mnioides.* The *Splachnum* species are considered to be rare in North America (Crum and Anderson 1981).

The most interesting of the vascular plants encountered in the area are Bent Sedge (*Carex deflexa*), Few-flowered Sedge (*C. pauciflora*), Three-seeded Sedge (*C. trisperma*), Wood Rush (*Luzula rufescens*), and Creeping Snowberry (*Gaultheria hispidula*). *Carex deflexa, C. trisperma,* and *Luzula rufescens* are rare in Alberta. *Carex deflexa,* a species of dry, open woodland (Moss 1983), occurs in two patches approximately 400 m apart at the west end of the area. One of these is along a seven-year-old seismic cutline; the other is in a roadside ditch. This species is known from six other localities in Alberta (Packer and Bradley 1984; collections in the Northern Forestry Centre herbarium (CAFB)). *C. trisperma*, a species of bogs and wet woods (Moss 1983), is the predominant sedge throughout the coniferous swamp. It is actually abundant in the area. In general, disturbance is considered a negative factor in influencing the distribution of native flora. However, along portions of certain seismic cutlines less than 15 years old, this sedge has become established in thick mats, almost to the exclusion of other graminoids. It is known from six other localities in Alberta (Packer and Bradley 1984; collections in CAFB). *Luzula rufescens*, a species occurring on the borders of bogs and fens (Porsild and Cody 1980), presents a rather special case. Technically, it has never been reported as occurring in Alberta (Moss 1983; Porsild and Cody 1980; Scoggan 1979). However, "It seems probable that material previously reported from the Swan Hills as *L. acuminata* Raf. (by Moss and Boivin) also belongs here." (in *L. rufescens*) (pers. comm. J.G. Packer). The collection of *L. acuminata* from the Swan Hills in CAFB was revised to *L. rufescens* by Packer. Three small clumps of this species were found in the area, two at the edge of a cutline in the northern portion of the area, and one in a similar habitat towards the west end of the area. The species would appear to have a very localized distribution in Alberta in the Swan Hills-Whitecourt area. The general distribution of the species is Amphi-Beringian with the nearest locality to the Alberta locations being in northeastern British Columbia (Porsild and Cody 1980). *Carex pauciflora*, a species of *Sphagnum* bogs (Moss 1983), is conspicuous and abundant in the "poor fen" area. It is more prevalent here than anywhere else I have seen the species in the Prairie Provinces. I have only encountered this species at one other locality in

Alberta (May Fire Tower south of Fort McMurray), but six other localities in north-central Alberta are indicated in the *Flora of Alberta* (Moss 1983). The species is not considered rare in Alberta, but it is on the Rare Vascular Plants list for Manitoba (White and Johnson 1980). *Gaultheria hispidula* has a rather interesting distribution in Alberta. It occurs at scattered localities in the mountains and eastward in central Alberta in a somewhat localized distribution between the North Saskatchewan River and Lesser Slave Lake (Moss 1983). It occurs across the boreal forest region of the Prairie Provinces, but is rare north of 56°N latitude (Scoggan 1979). It is relatively common at Goose River.

Approximately 135 ha of the peatland have been drained. This is only about ¼ of the total area. The drained area only includes portions of the young Black Spruce swamp. The areas containing the mature Black Spruce stand and the "poor fen" are to be left undisturbed as a control area. None of the species mentioned above is likely in danger of elimination from the area because of this drainage project as all have been found in at least one locality in the control area. However, some changes in relative abundance are likely to occur. It will be interesting to follow what changes do occur in the vegetation over the duration of the project.

Literature Cited

Crum, H.A. and L.E. Anderson. 1981. *Mosses of Eastern North America.* Columbia University Press, New York, New York. Vol. 1.

Hale, M.E., Jr. and W.L. Culberson. 1970. A fourth checklist of the lichens of the continental United States and Canada. The Bryologist 73(3):499-543.

Ireland, R.R., C.D. Bird, G.R. Brassard, W.B. Schofield, and D.H. Vitt. 1980. Checklist of the mosses of Canada. Natl. Mus. Can., Publ. Bot., No. 8. Ottawa, Ont. 75 pp.

Moss, E.H. 1983. *Flora of Alberta.* Second Edition. Revised by J.G. Packer. Univ. of Toronto Press, Toronto, Ont. 667 pp.

Packer, J.G. and C.E. Bradley. 1984. A checklist of the rare vascular plants in Alberta. Prov. Mus. Alta., Nat. Hist. Occas. Paper No. 5. 112 pp.

Porsild, A.E. and W.J. Cody. 1980. *Vascular Plants of Continental Northwest Territories, Canada.* Natl. Mus. Can., Natl. Mus. Nat. Sci., Ottawa, Ont. 667 pp.

Scoggan, H.J. 1979. *The Flora of Canada.* Natl. Mus. Can., Natl. Mus. Nat. Sci., Ottawa, Ont. Publ. Bot. No. 7.

Stotler, R. and B. Crandall-Stotler. 1977. A checklist of the liverworts and hornworts of North America. The Bryologist 80(3):405-428.

Vitt, D.H. and R.E. Andrus. 1977. The genus *Sphagnum* in Alberta. Can. J. Bot. 55(3):331-357.

White, D.J. and K.L. Johnson. 1980. The rare vascular plants of Manitoba. Syllogeus No. 27. Natl. Mus. Can., Natl. Mus. Nat. Sci., Ottawa, Ont. 77 pp.

Zoltai, S.C., F.C. Pollett, J.K. Jeglum, and G.D. Adams. 1973. Developing a wetland classification for Canada. In: Proc. 4th North Am. For. Soils Conf., pp. 497-511.

Author's Address:
Northern Forestry Centre, 5320-122 Street, Edmonton,
Alberta T6H 3S5.

Splachnum luteum, S. rubrum. *Commonly known as Umbrella or Petticoat Moss, the inflated "skirt" at the base of the capsule is believed to attract insects which aid in spore dispersal. As a group, the "dung mosses" are most often found in peatlands.* Photo: J.D. Johnson

Where Are the Alberta-Released Peregrines?

How many breeding pairs should there be?

Have most of them gone to the mountains?

R. Wayne Nelson

Despite a concerted effort spanning a full decade, the captive breeding and release programs with Peregrines have not yet resulted in a single known breeding pair in the rural environment of southern and central Alberta where 48 historic nesting sites are known. Dekker and Erickson (1986) hypothesized that the reasons may lie in a progressive decrease in available prey for Peregrines in this part of Alberta due to recent agricultural intensification and expansion. Their paper concluded with the queston: "Have recent habitat changes brought about by agriculture pushed prey populations in these areas below a threshold at which Peregrines can survive as breeding birds?"

In this paper I address two further questions: (1) What number of the released Peregrines might have survived to breeding age? (2) From what is known about habitat selection by Peregrines, where can we expect to find the survivors?

Estimated survival of released Peregrines

For a banded Scottish Peregrine population in 1976-82, Newton (in press) observed an adult mortality of 11% and an estimated maximum mortality of young birds from fledging to first-breeding age (two years old) of 56%. Perhaps this equates to mortality in the first year of 50% and second year of 12%; if second year mortality was greater than 12%, the first year mortality must have been less than 50%. The average mortality rate of breeders in four other Peregrine populations ranged from 16% to 32% (Enderson and Craig in press, Ambrose and Riddle in press, Court 1986, Nelson in press). For the sake of discussion, let us assume that the Alberta first-year mortality is 55%, second-year mortality is 20%, and adult mortality is 17%.

Of 163 Peregrines released in 1976-85 (Dekker and Erickson 1986), we can assume 58 reached minimum breeding age of two years old. These birds would be reaching maturity scattered through the years 1978-1987, with (say) 6 new adults per year if the releases had been evenly distributed in time. Some of these adults could have replaced previous adults which have died. By using the above model (which, for reasons not explained here, errs on the conservative side), and *assuming no reproduction at all from the paired birds in the wild*, by 1985 there could have been as many as 13 adult pairs. Even using the return rate obtained from the poorest part of the eastern U.S.A. release area (i.e. 10 released to obtain one returnee) (Barclay and Cade 1983), the southern Alberta population should have attained at least 4-5 pairs by 1985.

It is encouraging to note that at least four of the Alberta release sites (Edmonton, Calgary, Rosebud and Red Deer Rivers) have produced survivors, as evidenced by the falcons which have been individually identified at the nesting sites in Edmonton and Calgary (Dekker and Erickson 1986, Erickson pers. comm.). But where are the others?

If there were 15 wild adult pairs (30 birds), with an assumed mortality rate of 17% and *absolutely no natural reproduction* and recruitment, an average of six just-matured (release) birds would just replace the natural losses and sustain the population. But there is no reason to believe that breeding Peregrines in the southern half of Alberta are incapable of producing moderate numbers of young (see below). Therefore, the continued release of Peregrines should act as a supplement to the production of any wild pairs, and serve to speed the build-up of the wild population.

The biocide contamination of the Edmonton and Calgary female Peregrines has not been critically high (Erickson in press) and most of the eggs they have laid would not have been seriously threatened by extreme eggshell thinning. Therefore, unless the falcons in rural Alberta are much more heavily contaminated by a very different exposure to biocides, they should be producing adequately to maintain and increase their nesting population.

It is important to note that remnant Peregrine populations in Scotland (Mearns and Newton 1984) and along the Colville and Yukon Rivers in Alaska (Ambrose *et al.* in press), when released from serious biocide contamination problems, each doubled the number of nesting pairs in 5-7 years (Nelson in press). Once a nucleus Peregrine population is established and reproducing successfully, the surplus offspring which are produced can be expected to fill in the vacant historic sites

Fledgling Peregrine gliding past the release site with the east wall of the Rockies behind. Kananaskis Country, August 1979.

Two fledglings chasing each other below the Kananaskis Country release site, August 1979.

relatively steadily. Establishing the initial pairs may take some time, however.

The 163 Peregrines released in Alberta, 1976-1985, are similar in number to the 152 released in the eastern U.S.A. from 1975 to 1978 (Barclay and Cade 1983). However, in the eastern U.S.A. the recovery has been dramatically different. By 1979 one pair was known to have formed and laid eggs; in 1980 six young were hatched by three pairs; and in 1981 14 young were hatched by four pairs. In each of these years there were pairs of first-year birds and/or adult and first-year birds at other sites. To 1983, in eight years, the eastern U.S.A. program had released 511 falcons (Barclay and Cade 1983; Cade and Dague 1982, 1983) This is three times the number released in south and central Alberta to date. However, in 1985, while south and central Alberta apparently had only the Edmonton and Calgary nesting pairs (Dekker and Erickson 1986), the eastern U.S.A. had 38-40 pairs, 25 nesting attempts, and 16 reproducing pairs (Cade and Dague 1985). While the circumstances of the two populations are substantially different, there is good reason to expect this Alberta population should have considerably more than two breeding pairs present. Where are they?

I suggest that the Peregrine recovery in Alberta is slowly occurring (unseen) in the eastern slopes of the Rocky Mountains and that the (higher quality) mountain and foothills nesting sites will have to be filled before (poorer quality) cliffs on the plains will be inhabited once again. The next section outlines some of the evidence and reasons for this conclusion.

Habitat selection by Peregrine Falcons

1. Agricultural degradation of Peregrine habitat.

A significant decrease in the prey base causes Peregrines to expand their territories and increase their inter-nest distances (Nelson and Myres 1976; Nelson 1977). There must come a point at which the prey is so thinly dispersed and/or so far from the falcons' nest that the falcons fail in the breeding attempt or refuse to breed. Near this point, single birds or pairs of nonbreeders may use such a site as a base (see Hagar 1969).

I have little disagreement with the suggestion (Dekker and Erickson 1986) that the Peregrine's prey in some areas of Alberta has been greatly reduced by agricultural developments such as wetland drainage, cultivation of grasslands, elimination of fencerows, windbreaks, and woodlots or forests, and "clean" cropping to road edges. But are all of the historic Peregrine sites found in such close proximity to agricultural developments, and has the reduction of prey there been so thorough, that this is the full explanation for the failure of the historic sites to be reoccupied by Peregrines?

In 1964 J.H. Enderson (1965) "floated 478 miles of the Bow, Red Deer, North Saskatchewan, Pembina, McCleod, and Rosebud Rivers, and flew at low level 185 miles of the Athabasca River." He visited 17 of 21 reported nesting sites, and another observer visited 2. (Six sites, with 14 young, were occupied by pairs, two sites were held by single birds). I find it difficult to imagine that all of these nest sites were very close to agricultural developments, and all were so reliant on agriculture-influenced prey species, that declines in those species have made all of those sites unacceptable to nesting Peregrines today.

Also of interest (see below) is Enderson's (1965) observation that "All of the nesting ledges were on dirt banks less than 13 m high and two of the active nests were on sheltered ledges on banks less than 4 m high."

2. The Peregrine's nest site as an "ecological magnet"

Hickey (1942), for Peregrines east of the Rockies, described first-, second-, and third-class Peregrine cliffs. "First-class Peregrine cliffs are extremely high, often rather long, usually overlooking water, and generally dominating the surrounding countryside. These so attract this species in the breeding season that Peregrines will apparently occupy them no matter how many 'nests' are broken up or adult birds destroyed." Second-class cliffs are less substantial, and loss of both adults may leave the cliff vacant for an indefinite time. Third-class cliffs are small, perhaps on a long slope, possibly overlooking water, and are marginal because the death of one adult or other serious disturbances may result in relatively permanent desertion of the cliff.

Hickey also noted that a super-abundant food supply could override cliff height and security from disturbance and could result in a small cliff being first-class in terms of its attractiveness to Peregrines and its certainty of being occupied. Apart from the vicinity of the Peace-Athabasca Delta, there does not appear to be another Alberta area in which there are potential nest cliffs adjacent to a food supply which could be described as super-abundant.

3. Quantifying the Peregrine's habitat selection

Ellis (1982) successfully quantified the "ecological magnet" concept while searching for Arizona Peregrines. He hypothesized that, in a depressed population, the better sites would remain occupied and a comparison of occupied sites with abandoned sites would aid in identifying some important habitat preference characteristics. He assessed nest sites on the basis of a number of descriptive parameters, and found that four of these were most suitable in characterizing Peregrine sites: (1) total topographical relief (elevation extremes) within 3 km; (2) cliff height; (3) extent of suitable cliffs within 1 km ("suitable" means $\geq$ 60 m high, or $\geq$ 38 m if in a series of layers totalling $\geq$ 75 m); and (4) distance to nearest extensive permanent or near-permanent surface water. The habitat evaluation key which resulted

Four captive-bred Peregrines at their hack box. Kananaskis Country, August 1979.

from this study had predictive value when the investigator searched new areas to find occupied cliffs.

Although Ellis cautioned that "the important factors used by peregrine falcons in selecting breeding sites will likely vary from region to region, according to the type and concentration of prey, the topography, meteorological factors, the presence of competing species, etc.", it is likely that his methods and conclusions with this technique will be largely applicable in Alberta. Finally, Ellis found that all recent Peregrine sites in Arizona were in extensive canyon systems or extensive mountain ranges.

Unfortunately Ellis (1982) did not speculate upon the reasons which may underly the importance of these four parameters which characterize higher quality Peregrine nesting sites. There is value in looking at these four parameters "from a Peregrine's perspective" because it may help us to search more efficiently for the Alberta falcons.

Distance to water may reflect the falcon's need to drink and bathe; sometimes a water body concentrates prey or makes them particularly vulnerable to the hunting falcon. The extent of suitable cliffs nearby may be important in providing at least one suitable ledge for nesting and perhaps a choice of several alternative nest ledges. Topographical relief within 3 km of the nest, and the height of the nest cliff, probably are related to energy expenditure when hunting. Starting from a nesting site on an 8 m dirt bank 20 m above a river on the plains, a Peregrine must expend considerable energy in order to climb and stay at a height from which to hunt. Even soaring is expensive compared to perching. A tall cliff or building, while sometimes providing the bird with lift by way of deflecting the wind, also provides the falcon with a high-elevation, energy-saving perch from which to command a very large area over long periods of time when hunting.

A Peregrine with a higher density of available prey near its nest site can have a smaller territory (defended space), shorter hunting flights, and less energy expenditure overall. Similarly, a Peregrine with a tall nest cliff to hunt from will require less energy expenditure through the breeding season. It is reasonable to expect Peregrines to seek out nesting sites which will be especially energy-efficient. Indeed, through the biocide-caused decline in Peregrine populations, in most areas the better cliffs were the last to be abandoned. The reverse can be expected in the population recovery.

4. Nesting falcons in the Canadian Rockies

In a relaxed flight, within two hours west of Calgary and seven hours west of Edmonton, a Peregrine would find the east slopes of the Rocky Mountains, with spectacularly tall and long cliffs, tremendous topographical relief, nearby rivers, streams, and lakes and significant numbers of available prey. Were there Peregrines in the east slopes prior to the population crash?

In contrast to the findings in the U.S. Rockies (see below), there are no nesting records of Peregrines in the Canadian Rockies. This is not surprising, considering the size of the cliff faces (mountainsides), the size of the area, the rather small numbers of people traveling close to these cliffs, and the small amount of serious searching - which did not occur until after the Peregrine crash was well underway.

However, in the 1960s, John A. Campbell, Sr. (pers. comm.) observed an already-flying family of Peregrines in a backcountry area of Kananskis Country. In 1979, while working for Alberta Fish and Wildlife Division within Kananaskis Country, Julie Bauer, Pat Paul, and I checked reports of "falcons" and "nesting falcons" and inspected some of the more readily accessible cliffed areas. We observed an adult Peregrine in late June flying up and through a high pass well in the Rockies. Also, we confirmed the nesting Prairie Falcons at two locations at the east edge of the mountains and one location in the mountains, and found a new nesting location in the mountains. Also in the mountains we found a territorial female Prairie Falcon at a new location, and received a report of nesting Prairie Falcons at an additional site. That is, where there had been minimal suspicions of a mountain-nesting population of Prairie Falcons, we had nesting at five locations and a single bird at a sixth site, all within Kananaskis Country. From north of the Bow River we had reports of a further four pairs (Nelson and Bauer 1980). Thus, there appears to be a substantial nesting population of Prairie Falcons in the Rocky Mountains of Alberta, largely unknown prior to the mid-late 1970s.

Because there are no early records of Peregrines, nor Prairie Falcons, nesting in the mountains, it is unknown if one or both species were there before the Peregrine's decline. Because the Peregrine is the superior bird in competition for nesting sites (R. Fyfe, L. Oliphant pers. comm.), it seems possible that the Prairie Falcon invaded the mountains after the Peregrine was gone. Some of the present Prairie Falcon sites are spectacular locations in which it is not difficult to imagine

Peregrines nesting successfully. Certainly these Prairie Falcon sites should be regularly checked to try to discover a turnover from nesting Prairie Falcons to nesting Peregrines. Many other exceptional areas in the eastern Rockies likewise should be regularly investigated for signs of nesting Peregrines. In addition to the general nesting site parameters discussed above, there are hints from elsewhere about where we should be looking and why we should be looking for Alberta Peregrines in the mountains.

In the U.S. Rocky Mountains, Peregrines rarely nest above 2600 m but have nested as high as 3400 m (G. Craig, in Rocky Mountain/Southwest Peregrine Falcon Recovery Team 1976). In Alaska they nest at least up to 700 m (Cade 1960) and at 850 m in the Ogilvie Mountains of the central Yukon (pers. obsn.) These ceiling elevations are near or just above timberline. In the Alberta Rockies we might expect nesting Peregrines as high as 2400 - 1500 m (south to north). There is much suitable nesting and hunting habitat below these elevations in the Canadian Rockies and higher foothills.

The Rocky Mountain/Southwest Peregrine Recovery Team (1976) indicated a decade ago what might be expected in Alberta. Several quotes from that Recovery Plan follow:

"Throughout the region from Mexico to Alberta and British Columbia, peregrines formerly nested on cliffs, usually in mountainous areas or near rivers or lakes."

"Peregrines in the Rocky Mountain and Southwest region now persist mainly on mountainous cliffs and river gorges. Remnant active eyries are present upon cliffs which exceed 60 m in height. Nests are situated on open ledges and a preference for a southern exposure increases with latitude."

"Nearly all of the remaining active eyries provide pairs with a great height advantage above the surrounding terrain, which correlates with their use as hunting perches from which the falcons launch attacks at passing prey. Often, such places are of interest to people for the scenic view or rock-climbing opportunity they provide."

"The vast majority of the peregrine eyries in the Rocky Mountain/Southwest region are within 1-2 km of a stream or river. Such situations often provide lowlands rich in bird life and open areas over which to hunt."

"A few sites have been found away from major stream courses, but generally these have been associated with extensive oak brushland, Pinyon-Juniper woodland, or mixed coniferous forest."

In contrast to the situation in Alberta, south of the Yellowstone River in southern Montana, very little Peregrine nesting habitat exists along rivers east of the mountains. In the Rocky Mountain states a substantial recovery (mostly of banded birds) has occurred at historic mountain nest sites as a result of the release of 50-60 falcons per year in the mountains (J.H. Enderson pers. comm.).

Conclusions: where have all the Alberta Peregrines gone?

There should be a number of pairs of nesting Peregrines in southern and central Alberta. The known survival of some released birds, the establishment of nesting pairs in Edmonton and Calgary, the success of some other release programs, and the known population dynamics of the species, all suggest that there should be a sizable number of adult survivors from the 163 falcons released in 1976-85 in this part of the province.

It is not too surprising that Peregrines have occupied the two large cities in Alberta. Both cities have tall cliffs (buildings), large pigeon and starling populations, and river valleys with waterfowl, shore- and songbirds. And, fortunately, both cities have a few buildings with gravel or debris-laden ledges which can be used by nesting falcons. These artificial cliffs are immensely superior in height and length to any natural cliffs in south and central Alberta east of the foothills and Rockies.

If, as evidence from elsewhere suggests, Peregrines will select the better, more energy-efficient nesting locations before selecting the poorer nesting locations, it seems likely that the (largely unknown) nesting locations in the Rockies and higher foothills will have to be filled in by nesting Peregrines before they will again be found nesting on the low cliffs of the South and North Saskatchewan and other drainages in the lower foothills, mixed-wood forests, parklands, and plains.

It is important that the higher foothills and the eastern part of the Rockies be searched carefully for nesting Peregrines. Discovery of a few nesting sites there would allow for the development of a "search image" for nesting locations in that unknown habitat. Ellis' habitat evaluation key could be modified, if necessary, to assist in this type of mountain search.

Much expense and effort has gone into the Alberta Peregrine captive-breeding and release programs to date, but comparatively little effort has been expended on searching for and documen-

The top of the Kananaskis Country release cliff with high foothills and the east edge of the Rockies in the distance. During several of the years in which releases occurred here, earlier-released Peregrines returned and visited the new hack birds.

At the eastern edge of the Rockies a Prairie Falcon eyrie on a rather small cliff at 1725 m, high above a river valley. This site has good potential for Peregrines.

ting the success of these releases. The mountains and higher foothills are the most likely areas to hold nesting Peregrines in the early stages of population recovery. These birds, when found, will be important evidence of success. Such evidence is needed to ensure that the enthusiasm is kept high and the commitment is maintained to re-establish these breathtaking birds throughout their historic range in Alberta.

This paper is dedicated to the memory of Patrick Paul and Orval Pall. On a mountain-climbing expedition, Pat died in a Mexican airliner crash, 31 March 1986. During a wildlife telemetry study , Orval died in a light airplane crash, 6 June 1986. Both were skilled Alberta wildlife technicians, lovers of wilderness, and friends of wild falcons.

Acknowledgements

For helpful discussions and constructive criticisms of earlier drafts I thank Harold Carr, Dick Dekker, Jim Enderson, Gary Erickson, Richard Fyfe, Blair Rippin, and Al Wiseley.

Literature Cited

Ambrose, R.E. and K.E. Riddle. In press. Population dispersal, turnover, and migration of Alaska Peregrines. In T.J. Cade, C.M. White, and J.H. Enderson (eds.). Peregrine Falcon Populations, Their Management and Recovery.

Ambrose, R.E., R.J. Ritchie, C.M. White, P.F. Schempf, T. Swem, and R. Dittrick. In press. Status of Peregrine Falcon populations in Alaska, 1985. In T.J. Cade, C.M. White, and J.H. Enderson (eds.). Peregrine Falcon Populations, Their Management and Recovery.

Barclay, J.H. and T.J. Cade. 1983. Restoration of the Peregrine Falcon in the eastern United States. Bird Conserv. 1:3-40.

Cade, T.J. 1960. The ecology of the Peregrine and Gyrfalcon populations in Alaska. Univ. Calif. Publ. Zool. 63:151-290.

Cade, T.J. and P.R. Dague. 1982, 1983, 1985. The Peregrine Fund Newsletter Nos. 10, 11, 13.

Court, G.S. 1986. Some aspects of the reproductive biology of tundra Peregrine Falcons. M.Sc. thesis. Univ. of Alberta, Edmonton. 123 pp.

Dekker, D. and G. Erickson. 1986. Releases of Peregrine Falcons in southern and central Alberta, 1976-1985. Alta. Nat. 16(1):1-3.

Ellis, D.H. 1982. The Peregrine Falcon in Arizona: habitat utilization and management recommendations. Inst. for Raptor Studies Res. Rep. No. 1. 24 pp.

Enderson, J.H. 1965. A breeding and migration survey of the Peregrine Falcon. Wilson Bull. 77(4):327-339.

Enderson, J.H. and G.R. Craig. In press. Population turnover in Colorado Peregrines. In T.J. Cade, C.M. White, and J. H. Enderson (eds.). Peregrine Falcon Populations, Their Management and Recovery.

Erickson, G. In press. In T.J. Cade, C.M. White, and J.H. Enderson (eds.). Peregrine Falcon Populations, Their Management and Recovery.

Hagar, J.A. 1969. History of the Massachusetts Peregrine Falcon population, 1935-57. Pp. 123-131 in J.J. Hickey (ed.). Peregrine Falcon Populations, Their Biology and Decline. Univ. of Wisconsin Press, Mádison.

Hickey, J.J. 1942. Eastern population of the duck hawk. Auk 59:176-204.

Mearns, R. and I. Newton. 1984. Turnover and dispersal in a Peregrine *Falco peregrinus* population. Ibis 126:347-355.

Nelson. R.W. 1977. Behavioral ecology of coastal Peregrines (*Falco peregrinus pealei*). Ph.D. thesis. Univ. of Calgary, Calgary, Alberta. 490 pp.

Nelson, R.W. In press. Population dynamics of Peregrines - what is known and what is needed? In T.J. Cade, C.M. White, and J.H. Enderson (eds.) Peregrine Falcon Populations, Their Management and Recovery.

Nelson, R.W. and J.A. Bauer. 1980. Peregrine Falcon release, Kananaskis Country, 1979. Unpubl. report to Alberta Fish & Wildlife Div., Calgary. 51 pp.

Nelson, R.W. and M.T. Myres. 1976. Declines in populations of Peregrine Falcons and their seabird prey at Langara Island, British Columbia. Condor 78(3):281-293.

Newton, I. In press. Population dynamics and regulation in Peregrines. In T.J. Cade, C.M. White, and J.H. Enderson (eds.). Peregrine Falcon Populations, Their Management and Recovery.

Rocky Mountain/Southwest Peregrine Falcon Recovery Team. 1976. American Peregrine Falcon, Rocky Mountain and southwest population. Recovery plan. (Draft). 138 pp.

Author's Address:
4218-63 Street, Camrose, Alberta T4V 2W2.

Results of the 1986 May Species Count - Plants in Flower

J. Derek Johnson

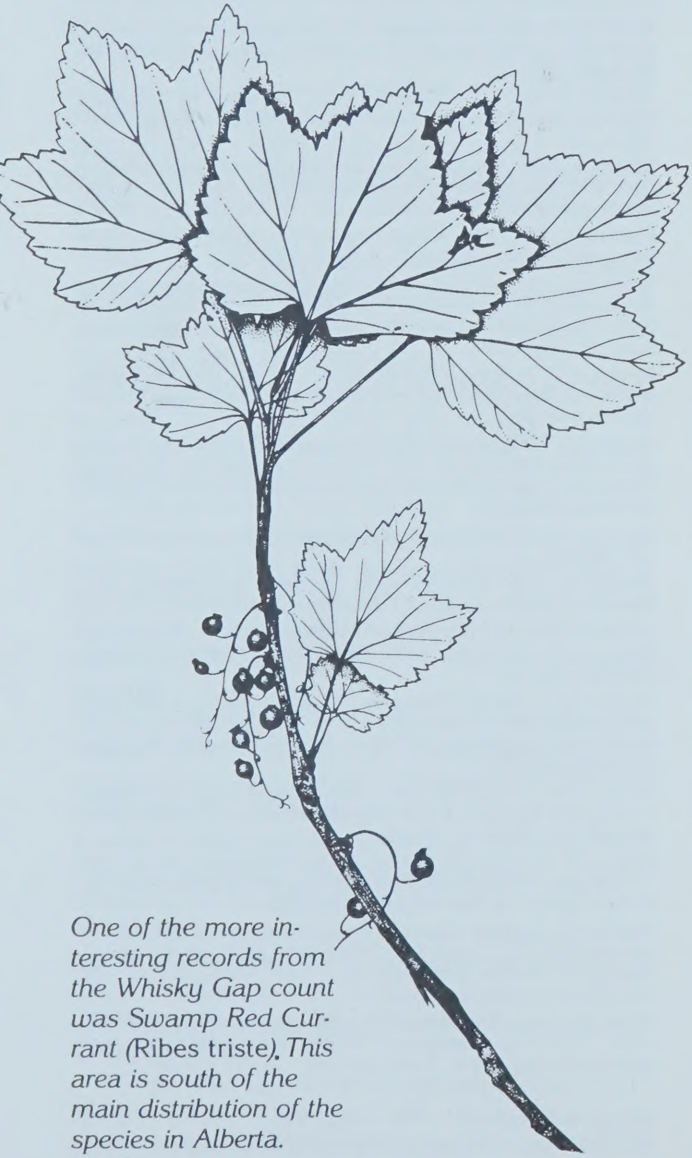
The following is a summary of the results of the botanical portion of the 1986 May Species Count, held May 24-25. The method of reporting continues to follow that adopted in 1984 (Johnson 1985).

The areas from which reports were received have been listed in approximate latitudinal order from south to north. Twenty-one reports covering 15 areas were received. A total of 61 participants reported 257 species in flower. The number of participants is the fourth highest in the 11 years that the count has been conducted. The total number of species seen in flower is lower than in 1985, however, it is still slightly above the ten-year average. While the number of *species* seen in flower may have been above average, the number of *plants* seen in flower was definitely below average.

The most interesting report for 1986 comes from Whisky Gap near the Alberta-Montana border, southeast of Cardston. Several species reported are new to the May Count and a few are on the Rare Vascular Plants list for Alberta (Packer and Bradley 1984). Almost all records were supported by specimens. For the first time in 11 years, no report was received from Fort McMurray.

Count participants must be wondering when we will again get an early spring and a good count of species in flower. In the past five years there has been one average and four late springs. The spring of 1986 was about a week late at the date of the count weekend, but unusually hot weather at the end of May speeded up phenological development considerably and by the end of the first week of June the season was back to normal. At least the 1986 count provided observers with generally good weather throughout the province on both days of the count weekend.

Sixteen species were reported for the first time on the 1986 May Count. Five of these are rare in Alberta. Eight of the new species (including three of the rare ones) came from the Whisky Gap report. Species reported for the first time include: *Carex deflexa* (Bent Sedge) from Glenevis; *C. prairea* (Prairie Sedge) and *Scirpus hudsonianus* (Alpine Cotton-grass) from Edmonton; *Carex raynoldsii* (Raynold's Sedge), *Rumex acetosa* (Green Sorrel), *Ribes inerme* (Mountain Gooseberry), *Lupinus lepidus* (Alpine Lupine), *Oxytropis lagopus* (Hare-footed Locoweed)[1], *Lamium amplexicaule* (Henbit), and *Castilleja cusickii* (Yellow Paintbrush) from Whisky Gap; *Hackelia floribunda* (Large-flowered Stickseed) from Whisky Gap and Lethbridge; *Eriophorum brachyantherum* (Close-sheathed



*One of the more interesting records from the Whisky Gap count was Swamp Red Currant (*Ribes triste*). This area is south of the main distribution of the species in Alberta.*

---

[1] Reports of this species from Yamnuska in 1977 and Grande Prairie in 1985 were likely in error and referable to other species. Neither report was included in the final compilation for that year.

Cotton-grass), *Luzula rufescens* (Wood Rush), and *Gaultheria hispidula* (Creeping Snowberry) from southeast of Valleyview; *Cardaria pubescens* (Globe-podded Hoary Cress) from Lethbridge; and *Plantago elongata* (Linear-leaved Plantain) from Dry Island Buffalo Jump Provincial Park.

Carex deflexa, Luzula rufescens, Ribes inerme, Oxytropis lagopus, and *Castilleja cusickii* are rare in Alberta. *Carex deflexa,* a species of dry, open woodland (Moss 1983), is known from about a half dozen localities in the province (Packer and Bradley 1984; collections in the Northern Forestry Centre herbarium), and the Glenevis-Whitecourt area was one of the first areas where it was found (Moss and Pegg 1963). *Luzula rufescens* occurs on the borders of bogs and fens and is an Amphi-Beringian species (Porsild and Cody 1980), reaching the southern limit of its distribution south of Whitecourt. It is known from three localities in the province. *Ribes inerme* is a species of montane woods from Willmore Wilderness Park south to Waterton Lakes National Park (Moss 1983). It is the most common gooseberry in Waterton Park (Kuijt 1982), but this locality is not indicated in the Packer and Bradley (1984) checklist. The Whisky Gap record is slightly east of the known Waterton localities. *Oxytropis lagopus* and *Castilleja cusickii* are both species of grassland in the extreme southern portion of the province. Whisky Gap falls within the known range for both species (Moss 1983). An additional interesting record from the Whisky Gap report is that of *Ribes triste* (Swamp Red Current). This locality is considerably south of the main distribution of the species as indicated in the *Flora of Alberta* (Moss 1983) and also farther south than the recent report by Droppo and Pinel (1986).

Four of the twelve key species used by Bird (1982) in his phenological study are proving to be good indicators of the earliness or lateness of spring as far as the May Species Count goes. In an average year, *Smilacina stellata* (Star-flowered Solomon's-seal) should at least be beginning to flower in all areas by the date of the count weekend. It was reported from 9 of 15 areas on the 1986 count, but three observers made specific comment that this species was either not in flower or was only in flower in the most exposed locations. This is an indication of a late spring. *Prunus virginiana* (Choke Cherry) is normally reported from about half of the recording areas in an average year. In 1986 it was reported in flower from only two areas, another indication of a late spring. *Lathyrus ochroleucus* (Cream-colored Vetchling) represents a situation similar to that of Star-flowered Solomon's-seal in that, in an average year, it should be reported in flower from a majority of the reporting areas. However, for the first time in the 11 year history of the May Species Count, not a single count reported this species in flower. Definitely a sign of a late spring. Finally, if *Galium boreale* (Northern Bedstraw) is reported in flower at all on the May Species Count it is an indication of an early spring. This species has only been reported in flower once in the past five years.

Shepherdia canadensis (Canada Buffaloberry) was recorded in flower in 11 of the 15 reporting areas. This is an unusually high number, even for a late spring. It is normally mostly past flowering by the date of the count weekend. In my experience, *Clematis occidentalis* (Purple Virgin's-bower) is a widepsread, but not particularly abundant species. It was listed in flower from nine areas on the 1986 count, a record high for the species. In the weed category, *Medicago lupulina* (Black Medick) is rarely reported in flower on the May Count, but was included in the reports from three areas in 1986. *Asperugo procumbens* (Madwort), a rare weed in Alberta, appears to have become locally established in Edmonton; it has been reported in flower for three consecutive years now. *Matricaria perforata* (Scentless Chamomile), rarely reported during the early years of the count, has become a regular inclusion in reports from the Edmonton area over the past five years. In fact, it has become a very serious weed in the area, particularly west and south of the city. It is a very successful and aggressive species in disturbed areas. Part of its success is due to a very lengthy flowering period. Flowering specimens were observed from late May into early November in 1986.

Two perennial areas of confusion were again evident in the 1986 count. Some observers seem to be having difficulty in separating *Astragalus dasyglottis (= A. agrestis)* (Purple Milk-vetch) and *A. striatus* (Ascending Purple Milk-vetch). The character most often used to separate these two species is that, in the former, the hairs on the leaves and stems are attached at the base, thus appearing erect under a hand lens, while in the latter, they are attached at the middle, thus appearing parallel to the stem or leaf under a hand lens. Also, Purple Milk-vetch is generally more flexuous and reclining than is Ascending Purple Milk-vetch, which tends to be more robust and erect. Both are relatively common species, but in my experience, Purple Milk-vetch is the more common and flowers earlier. Whenever I have been sent a specimen identified as *A. striatus* it has turned out to be *A. dasyglottis,* which leads me to be suspicious of some of the reports of *A. striatus*. However, in the absence of specimens to prove otherwise, I will continue to accept records of *A. striatus* as submitted.

The second problem is likely insoluble without the supporting evidence of specimens. The taxonomy of the *Antennaria* (Pussytoes) species is confusing to almost everyone, particularly considering the changes made in the revised *Flora of Alberta* (Moss 1983). I am partly to blame for some of this confusion because I did not do a proper job of updating the checklist when I switched to using the revised *Flora* after the 1984 count. The species most often reported in the past was *A. nitida* (Small-flowered Everlasting) which is now included in *A. parvifolia* (Small-leaved Everlasting) in the revised *Flora.* What used to be *A parvifolia* is now included in *A. aprica* (Low Pussytoes) in the revised *Flora.* Based on past experience, I would have simply taken the reports of *A. nitida* and placed them in *A. parvifolia* for the 1986 count. However, just to complicate matters, the specimens I was sent this year turned out to be *A. aprica*. Confused? So am I. Without specimens to clarify the matter, I think there will be a large category for unidentified *Antennaria* spp. in the count results for some time to come. While still on this troublesome genus, almost all reports of *A. pulcherrima* (Showy Everlasting) have proven to be *A. anaphaloides* (Tall Everlasting) on examination of specimens. To help straighten out some of the problems in this genus, I would request that on future counts observers collect specimens (where legal) and send them to me for verification.

Following is a list of observers, totals (1985 in brackets), and other pertinent remarks for each area.

1. **Whisky Gap:** This area of relatively undisturbed, rolling Rough Fescue grassland and shrub thickets near the Montana border provided the most interesting report for the May Count in several years. The 86 species submitted by George and Etta Scotter and Barbara and Lynn Sommerfeldt represented the single area, single count high for the province in 1986. In addition to the particular species noted above, several others recorded have distributions restricted to the extreme southern or southwestern part of the province.

2. **Cypress Hills:** A count has been done in this area for four consecutive years now and if regular counts continue, it may soon be added to the list of major count areas. Margaret Walker, and Doug, Sue, and Sandy Macdonald recorded 46 (58) species in flower. The four-year average for this area is 49 species.

3. **Lethbridge:** The continuing dedication of Liz Hall in providing reports resulted in a total of 72 (84) species being noted in flower from four local areas. This broke down as follows: 43 species from the west end of the Milk River Ridge; 42 species from Six Mile Coulee; 40 species from Gwatkins Bottom; and 25 species from Alexander Wilderness Park (formerly Riverine Park). The 72 species is the third highest total for the province in 1986 and the second highest total ever for the Lethbridge area.

4. **Chain Lakes:** Jim Posey observed 25 species in flower at Harvey Gardner's ranch east of Chain Lakes Reservoir. He commented that spring "seems very late for this location."

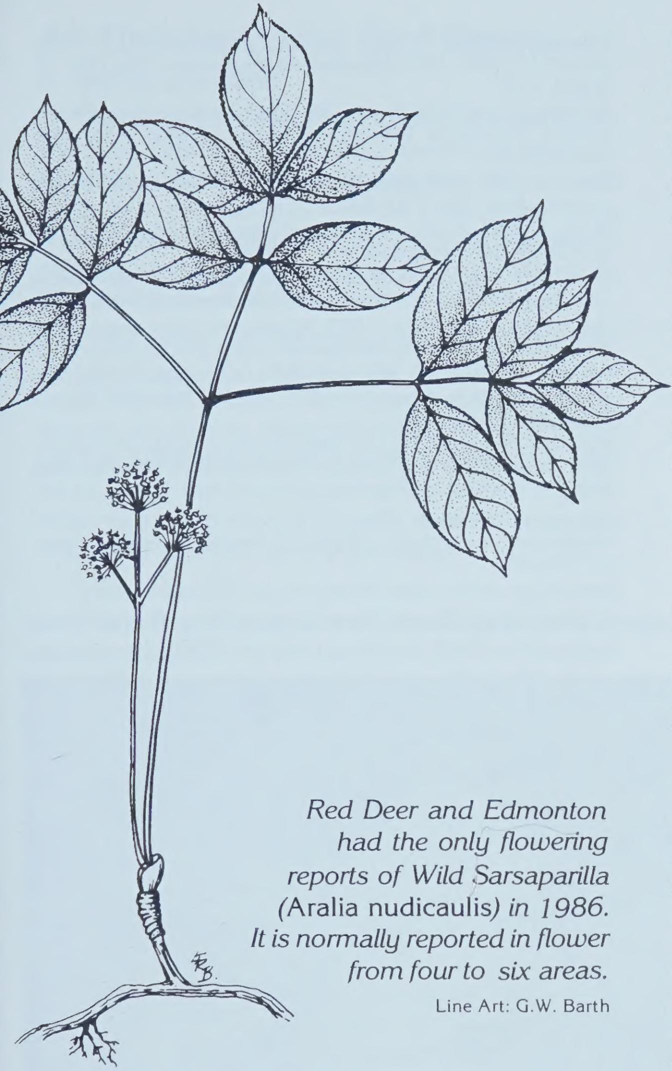
5. **Calgary:** Thirty-eight (75) species were recorded in flower by Don Stiles on a survey of four areas. These included his East Didsbury Bluebird Trail, the Bow River below Queensland, Anderson Road-Caburn Park, and Beaverdam Flats. This is the third lowest total from the Calgary area in the 11 years that reports have been submitted. While at least one submission covering the City of Calgary is received every year, there should be more. Greater coverage would add much to the overall picture when comparisons between areas and years are made.

6. **Yamnuska:** A total of 60 (76) species was reported in flower from this area. This is the third lowest total in the 11 years that this count has been conducted. Participants included: Jean Greig, Marlene and Ron Langevin, Diane and Mike McIvor, Bob and Mary Smith, and Eva and Kate Zidkova.

7. **Banff-Canmore:** Joyce and Keith Cole, Jean Greig, Marlene Langevin, Diane and Mike McIvor, Bob and Mary Smith, and Eva and Kate Zidkova listed 59 (76) species in flower from this area (including Wind Ridge). This is one below the ten-year average for the area.

8. **Dry Island Buffalo Jump Provincial Park:** Fifty (58) species were reported in flower from this area by Jim Posey. *Myosurus minimus* (Least Mousetail) was again reported in flower from the area after the initial report in 1985. *Allium textile* (Prairie Onion) was nowhere near as conspicuous here in 1986 as it was in 1985.

9. **Red Deer:** Seven areas were surveyed by a total of 14 people in the general Red Deer count circle.



*Red Deer and Edmonton had the only flowering reports of Wild Sarsaparilla (*Aralia nudicaulis*) in 1986. It is normally reported in flower from four to six areas.*

Line Art: G.W. Barth

Jim and Anna Robertson and Dale Harrison covered Waskasoo Park. Dorothy and Sandy Murray surveyed an area 3 km SW of Red Deer. An area 16 km NW of Red Deer received attention from Beth and Albert Peck. Kerry and Marjorie Wood did a count 15 km E of Red Deer. The Grassy Lake area, 30 km E of Red Deer, was covered by Helen and Herb Harris and Chris Bruels. Dorothy and David Dickson reported on an area 12 km E of Innisfail. Myrna Pearman compiled and submitted the summary report for the area including 44 (43) species in flower. This is three below the seven-year average for the area.

10. **Stettler-Buffalo Lake:** The annual survey of the Bird farm and Buffalo Lake Narrows area revealed 44 (57) species in flower. (*Acer negundo* (Manitoba Maple) was inadvertently left off of last year's count.) Charley and Ann Bird did the survey. The F.A.N. Spring Meeting was held in Stettler, May 10-11, where a total of 21 species was observed in flower from the town, the east side of Buffalo Lake, and the Red Deer River east of Highway 21. This is the fewest species ever encountered at a F.A.N. Spring Meeting. However, it should be noted that in addition to a late spring, the meeting was held one week earlier than usual. Charley and Ann Bird, Pat Clayton, Derek Johnson, Sylvia L'Hirondelle, Lloyd Lohr, Fred Schutz, and George Scotter provided observations. The grand total for the Stettler-Buffalo Lake area was 52 species in flower, slightly below the ten-year average for the area.

11. **Drayton Valley:** Derek Johnson and Steve Zoltai listed 52 (64) species in flower on the eighth annual survey of the area surrounding Hoople Lake. This is one below the seven-year average for the area.

12. **Edmonton:** Six reports from the Edmonton area were received, including a total of 96 (83) species in flower. The combined total is the highest for the province in 1986, and ties for third highest in the 10 years that a count has been conducted in the Edmonton area. Patsy Cotterill recorded 45 species in flower from Patricia Ravine, Terwillegar Park, and Whitemud Creek. Beth and Judy Cornish reported 14 species in flower from Whitemud Creek, south of Rainbow Valley. Leslie Baker, Dave Cuthiell, and Derek Johnson listed 35 species in flower from a peatland north of Stony Plain Road and east of 199th Street. Patsy Cotterill, Terry Freidrich, and Alice Hendry encountered 59 species in flower at the Wagner Natural Area. Elisabeth Beaubien and Linda Kershaw observed 22 species in flower in the Beaverhill and Hastings Lakes area. Jim Lange submitted a report including 18 species in flower from the Lange family farm northwest of Westlock.

13. **Glenevis:** Coverage of the Lac St. Anne, Glenevis, Pegg farm, and Majeau Lake areas by Leslie Baker, Dave Cuthiell, Derek Johnson, and George Pegg resulted in a list of 68 species in flower.

14. **Valleyview:** Three sites in the general Valleyview area were surveyed, resulting in a total of 47 species being found in flower. The sites covered included Young's Point Provincial Park on Sturgeon Lake west of Valleyview, the town of Valleyview, and a peatland near Sweathouse Fire Tower southeast of Valleyview. Graham Hillman, Derek Johnson, Brian Mazur, Bruce Robson, and Margaret Upton were the observers. *Carex deflexa*

(Bent Sedge) was encountered in the latter area, but it was past flowering. This particular peatland is notable for some of the interesting species which grow there.

15. **Grande Prairie:** Gavin and Ellen Craig reported 24 (53) species in flower from the Wembley-Grande Prairie area. This is the lowest total ever in the ten years that reports have been submitted from this area. The report of *Betula occidentalis* (River Birch) from the area is notable in that it is north of the general distribution of the species indicated in Moss (1983).

A complete listing of count results is available without charge from the Curator of Botany, Provincial Museum of Alberta, 12845-102 Ave., Edmonton, Alberta T5N 0M6.

The 1987 count will be held on the weekend of May 30-31.

Literature Cited

Bird, C.D. 1982. 1981 Alberta flowering dates. Alta. Nat. 12, Suppl. 1:33.

Droppo, O. and H.W. Pinel. 1986. Vascular flora of the Brown-Lowery Provincial Recreation Area, Alberta. Alta. Nat. 16(4):105-110.

Johnson, J.D. 1985. Results of the 1984 May Species Count - plants. Alta. Nat. 15(1):5-8.

Kuijt, J. 1982. *A Flora of Waterton Lakes National Park.* Univ. of Alta. Press, Edmonton, Alta. 684 pp.

Moss, E.H. 1983. *Flora of Alberta.* Second Edition. Revised by J.G. Packer. Univ. of Toronto Press, Toronto, Ont. 667 pp.

Moss, E.H. and G. Pegg. 1963. Noteworthy plant species and communities in west central Alberta. Can. J. Bot. 41:1079-1105.

Packer, J.G. and C.E. Bradley. 1984. A checklist of the rare vascular plants in Alberta. Prov. Mus. Alta., Nat. Hist. Occas. Paper No. 5. 112 pp.

Porsild, A.E. and W.J. Cody. 1980. *Vascular Plants of Continental Northwest Territories, Canada.* Natl. Mus. Can., Natl. Mus. Nat. Sci., Ottawa, Ont. 667 pp.

Author's Address:
Northern Forestry Centre, 5320-122 Street, Edmonton, Alberta T6H 3S5.

*Globe-flower (*Trollius albiflorus*), a species of moist alpine and subalpine banks and meadows, flowers from mid-June through July.* Photo: P.S. Debnam

An Unintentional Bird Snare

J. Derek Johnson

The research project I am currently involved in with the Canadian Forestry Service is a study of the potential of drainage to improve tree growth on certain peatlands in Alberta. One of our three study sites is a treed fen located along a tributary of Wolf Creek, 16 km south of Highway 16, along the Wolf Lake Road, southeast of Edson.

In our work we have occasion to make considerable use of a thread land measurer, known as a "Topofil Chaix." The apparatus uses a lightweight, but strong, white polyester thread. We have used it to measure distances between points as well as to mark the boundaries of our sample plots. After use the thread is usually severed from the measurer and left on the ground.

Unbeknown to us our work was creating a death trap for some of the local avifauna. During the field season of 1985 we encountered birds entangled in the thread on three separate occasions. One was a Black-capped Chickadee; another was a Gray Jay. Both were mature birds and both were found dead. The third appeared to be an immature Northern Flicker and it was found alive. This bird was successfully untangled and released, however, we do not know if it survived. All the birds had caught the thread with either a leg or a wing and in their struggles to free themselves had only succeeded in entangling themselves more.

We were surprised that our work would be a hazard to the local wildlife in this way, but once we realized there was a problem we were much more careful when using the thread, either rolling as much of it up as we could after use and disposing of it, or if it had to remain in place, making sure it was as close to the ground as possible. During the 1986 field season no casualties were encountered, despite an even greater use of the thread to mark plot boundaries.

At our other two study sites, Goose River southeast of Valleyview, and Kimiwan Lake north of McLennan, we have not encountered any entrapped birds. Whether or not this is due to habitat differences and hence differences in the local avifauna, or just blind luck, we do not know.

As a final comment, personal observation has shown the thread to be totally ineffective in restraining moose.

Author's Address:
Northern Forestry Centre, 5320-122 Street, Edmonton, Alberta T6H 3S5.

Bird Longevity Records

Edgar T. Jones

The following are two possible longevity records for Yellow Warbler and Red-eyed Vireo recaptured during the 1986 banding season.

Yellow Warbler: Banded by the writer June 9, 1980, 13 km south of Gadsby, Alberta, near Shooting Lake. Band No. 1510-08364. This bird was an adult male at the time of banding so at the time of its retrapping on June 10, 1986, had to be at least eight years old.

Red-eyed Vireo: Banded by the writer August 13, 1980, at my banding station along Whitemud Creek in Edmonton, Alberta. Band No. 880-81920. This bird was also an adult at the time of banding, so at the date of retrapping on August 17, 1986, had to be at least eight years old.

Author's Address:
6115-141 Street, Edmonton, Alberta T6H 4A6.

Novel Bird Species to Look For in Alberta

J. Derek Johnson

Being Editor of the *Alberta Naturalist* is often a tedious and frustrating experience, but every once in a while something comes along to brighten my day, if only momentarily. The Winter 1986 issue of the *A.N.* provided such an opportunity. Between our typist trying to decipher handwritten copy and the typesetter having a bad day, some rather new and interesting bird species to look for in Alberta cropped up. Someone suggested that I leave some of these bloopers in the Christmas Bird Count report to see if anyone actually reads it, but I thought that might reflect badly on the compiler, so I chose not to do so. Besides, I thought that if I brought special attention to them it might enliven the readers' day, as it did mine. Honestly, I did not make any of these up myself!

American Wingeon
Burrowing Oil
Three-towed Woodpecker
Pileated Wordpecker
American Cow
American Dripper
Northern Strike
Loggerhead Sharke
Snow Bruting
mole House Finch
White-winged Grossbill

I do think that the Burrowing Oil would have been a more appropriate choice for Alberta's provincial bird that the Great Horned Owl. I presume that very small ropes are used to pull the Three-towed Woodpecker. A Pileated Wordpecker might be the best way to describe my typing style. I hope

I am not anywhere nearby when the American Cow flies over! Dripper might actually be the best way to describe that particular species considering its habitat. I am sure the provincial labour situation was on the typist's mind the day she came up with a Northern Strike. By the way, does a Loggerhead Sharke look anything like a Hammerhead? I think the mole House Finch is carrying interbreeding between species just a bit too far. If I were a Snow Bruting or a White-winged Grossbill I would consider such a description a defamation of character.

If anyone else has a novel bird species to add to this hypothetical list for Alberta, please let me known and I will be happy to pass it along.

Author's Address:
7109-106 Street, Edmonton, Alberta T6E 4V5.

Red Squirrel Harasses Sharp- shinned Hawk

Jack L. Park

Early one September morning as I was walking along an Edmonton ravine, I saw an immature Sharp-shinned Hawk perched on a dead branch of a poplar tree about 5 to 6 m into the dense woods. I noticed the hawk's peculiar behavior as it peered first to one side then the other side of the tree. About 2 m away was a red squirrel obviously very aware of the hawk's presence. From its vantage point in a conifer the squirrel seemed to be deliberately approaching the hawk and would cautiously approach near the poplar, leap to the opposite side of the tree from the hawk and peer first from one side then the other. The bird twisted and turned its head to keep the squirrel under surveillance. This went on for at least five minutes, but finally the young hawk took a short bursting flight at the squirrel that wisely disappeared into the dense conifers. Coming to rest only 2 or 3 m away, the hawk stared at the squirrel that once again started its annoying harassment of the hawk. After 2 or 3 minutes of this action the hawk flew off, probably seeking more quiet surroundings.

Author's Address:
10236-70 Street, Edmonton, Alberta T6A 2T4.

The Elusive White-winged Crossbill

Dale Stelter

The White-winged Crossbill is a resident of the boreal forest across North America, from Alaska to Newfoundland, and south into the northern United States. During winter, there is often somewhat of a southern shift in range. As the species prefers coniferous forest, or mixedwood forest where spruce is predominant, it occurs in the deciduous parkland and prairie regions of Alberta only as an irregular visitor, and usually only in winter.

In any locality, the visits of the White-winged Crossbills are usually sporadic. Travelling in flocks, the birds may be present for one or two years, and gone the next. In feeding, White-winged Crossbills wander widely and irregularly. Spruce seeds, extracted from cones, are a favored food. The crossed bill tips are a special adaptation for extracting the seeds. A wide variety of other seeds, plus berries and some insects, complete the diet.

At any time of year, a pair of White-winged Crossbills may leave the flock to occupy a territory for mating and nesting. However, in Alberta, nesting usually occurs in spring and summer. Nests are built in coniferous trees, at various heights above the ground. The nests are constructed of twigs, mosses, and bark shreds, and lined with grass, hair, and feathers. Three or four eggs are laid at a time, and are pale bluish-green with brown and lavender spots.

The white wing bars distinguish the White-winged Crossbill from other species that are similar in appearance. For example, the Red Crossbill - common only in the Rocky Mountains, the foothills, and the Cypress Hills - is similar in coloration of both sexes to the White-winged Crossbill, but does not have the white wing bars. The male Purple Finch is similar in size and coloration to the male White-winged Crossbill, but lacks the white wing bars, and crossed bill. The male Pine Grosbeak is also similar in coloration to the male White-winged Crossbill, but is much larger, has less prominent white wing bars, and lacks the crossed bill.

Unfortunately, White-winged Crossbills are not easily attracted to feeding stations, even if they do stay in an area for an appreciable length of time.

Author's Address:
Box 18, Site 302, R.R. 3, Onoway, Alberta T0E 1V0.

F.A.N. NEWS

Spring Field Meeting

Hosted by The Bow Valley Naturalists, Saturday & Sunday, May 23-24, 1987.

Saturday, May 23

Field trip to Wind Valley and Wind Ridge Leader: Bob Smith. Meet at Banff - Bear Street parking lot across from the Whyte Museum at 9:00 a.m. Or in Canmore - Travel Alberta Information Centre between the Trans-Canada Highway and Highway 1A - western edge of Canmore at 9:30 a.m. Or Deadman's Flat - Husky Station (Trans-Canada Highway) at 10 a.m. This is opposite the trailhead and is approx. 8 km east of Canmore.

This field trip will provide some spectacular mountain scenery and some spring blooming wildflowers in the midst of prime Elk and Bighorn Sheep habitat. Leader Bob Smith is a renowned nature photographer who knows the Canmore Corridor better than anybody.

Field trip to Stoney Squaw Mountain. Leader: Heather Dempsey. Meet at Banff - Bear Street Parking Lot at 1:00 p.m. This field trip will ascend one of the Banff area's more humble but interesting mountains for panoramic views of the Bow Valley. Leader Heather Dempsey is a Park Naturalist with Environment Canada - Parks who has a thorough knowledge of the natural features and human history of the area.

Director's Meeting. Time: 10:00 a.m. - 12:00 a.m., 1:00 p.m. - 5:00 p.m. Location: Banff Firehall located on Caribou Street, one block east of Banff Avenue.

Evening Program. Time: 7:30 p.m. Location: Banff Senior's Centre located on corner of Bear St. and Buffalo St. above the Banff Public Library. John Woods will present *"The Banff Elk Project"* John is a wildlife biologist and Project Research Associate who is in the second year of a long term study of Elk in Banff National Park.

Sunday, May 24.

Early morning bird walk. Leader, Mike McIvor. Time: 6:30 a.m. Meet at the Bear Street parking lot.

Half-day field trip. Leader John Woods. Time: 9:00 a.m. Meet at the Bear Street parking lot. John has generously offered to lead us on a search for some of his radio-collared subjects. This will be a close-up look at a major wildlife project in progress.

Accommodation and Food. There is a wide variety of choice of campgrounds and motels and restaurants in Banff and Canmore. One suggestion, The Banff International Hostel on Tunnel Mountain Road in Banff. Accommodation is available for $14.00 per person, per night for non-members. Bookings should be made well in advance. Phone 762-4122.

Inclement weather possibilities - Visit the Cave & Basin Centennial Interpretive Centre and the Whyte Museum on Bear Street.

For more info. contact Mike and Diane McIvor in Banff at 762-4160 (evenings).

F.A.N. Summer Field Trip

July 11-12, 1987. South Castle Wildland - Southwestern Alberta. Hosted by the Lethbridge Naturalists' Society.

Meet at locked gate by Yarrow Creek at 9:00 a.m., Saturday, July 11 for an all day hike. Bring lunch. This is a mountainous area, so the hiking will be fairly strenuous.

Directions: 1) From Hwy. 3, take Hwy. 6 south through Pincher Creek. 2) At Spread Eagle Road, 3.2 km (2 miles) south of Twin Butte, turn west and go 6.4 km (4 miles) to a "T" in the road. 3) At the "T", turn left and go south about 3.2 km (2 miles). This will bring you to the locked gate by Yarrow Creek.

Accommodation: *Campgrounds:* 1) Waterton Lakes National Park. 2) Yarrow Creek Recreation Area, 2 km N of Twin Butte, access via Hwy. 6. 3) Crooked Creek Recreation Area, 5 km NE of Waterton Lakes National Park gate, access via Hwy. 5. 4) Waterton Riverside Campground, 5 km NE of Waterton Lakes National Park gate, access via Hwy. 5. 5) Waterton Homestead Campground, 3 km N of Waterton Lakes National Park gate, access via Hwy. 6. *Motels:* Pincher Creek and Waterton Lakes National Park.

President's Report

This has been an exciting year and one which I hope will mark FAN as becoming pro-active in the endless challenge of protecting our natural heritage. Like all corners which one turns around, it has been preceded by a great deal of hard work by dedicated people and any success in the future will be based on the accomplishments of past presidents and the club directors. I am referring in particular to the Alberta Bird Atlas Project and hopefully its successors for mammals, insects, plants, etc. - the list could be endless. The Atlas in itself is data collection while enjoying the outdoors and hopefully learning to equate birds as good indicators of healthy habitat. Rachel Carson's "Silent Spring" still lurks in the background which is why FAN has to become pro-active and stay that way; to encourage others to see what surrounds them through naturalists' eyes, to be disturbed when changes occur and not to acquiesce in the name of progress before the full implication of what is being done is understood. A tall order but one I'm sure we can strive for.

Accomplishments for 1986. Following Dave Ealey's lead I have grouped these under the FAN objectives.

1a. To Promote. With FAN's mandate to promote natural history throughout the Province, the Directors undertook to write a proposal for an all-season Atlas of the Birds of Alberta. The purpose was two-fold; to enlarge the scientific data base on bird populations with a view to monitoring habitat changes, and secondly, to engage as many Albertans as possible in the educational and recreational pursuit of actually censusing birds. For the proposal the knowledge, experience and time of many directors, FAN members and others was sought and generously given. The proposal itself was an expression of the enthusiasm generated after the Endangered Species Workshop which saw the setting up of a multi-agency Management Committee to draw up the criteria for an all season atlas. The proposal has been accepted and FAN has contracted an Executive Director to raise the necessary funds, manage the project and recruit the volunteers.

1b. For the second year the Federation shared a booth at Klondike Days and the Sportsman's Show in Edmonton with the local clubs. The displays were manned by volunteers though much of the display set up and preparatory work was done by a recreation summer student, including a useful take home brochure on attracting birds to your back yard. Membership application forms were also available and though we were primarily promoting local clubs and activities, FAN membership forms have been coming in as a result.

This is an area in which we need to do more work - the new slide/tape display will help as will the growing experience of directors and members in running a booth and actually interacting with the general public. We need to take this kind of activity to smaller communities.

2. Communication. The *AN* continues to be a source of pride but it can only act as a means of communication between clubs if member clubs remember to send in announcements and activities in time for the Editor to publish them. The *Alberta Bird Record* is now also mailed from Edmonton.

3. Foster Formation of New Clubs. This is still an area in which we are working. The changes to our Constitution will allow like-minded groups to affiliate with FAN without taking the extreme step of becoming active members. My understanding of the fledgeling clubs in Brooks, Crowsnest area, Hinton and Strathcona is that they wish to remain locally oriented and that full membership with all that entails is too much to ask at present. It then does open the door, however, to endeavours such as the Beaverhill Bird Observatory, if its management decides to become a separate entity from the Edmonton Bird Club. (At present it is a committee of the E.B.C.)

Active letter writing and submission of briefs has been the focus this year, letters have gone to the relevant persons on the use and formation of National Parks, the provincial Ecological Reserves programme, game ranching, Wildlife Act, South Moresby, and other matters.

By having Board meetings at various locations throughout the Province, fieldtrips and evening talks can confirm FAN's interest in and support of habitat preservation. The examples are Stettler where we viewed and discussed the needs of farming and wildlife habitat and Brooks where a co-operative effort had proven successful.

5. Organize and Conduct. Though the Endangered Species Workshop was a co-operative venture, FAN directors were heavily involved in the planning, implementation, and final wrap up of the project. Our Board Meeting and AGM were part of the whole which saw experts and laymen from the Prairie Provinces and Northern U.S. meet to discuss, and act upon (Alberta Bird Atlas Project) the endangered species of this part of the continent. The Workshop could not have been held without the catalyst of FAN. Similarly it could not have been hosted by FAN without the support of sponsoring governmental and wildlife-oriented agencies.

FAN hosted a smaller but no less important conference on Urban Natural Areas as part of its 1987 A.G.M. The Calgary Field Naturalists as well as the Calgary area FAN directors contributed much time and effort, making this another successful conference.

With the Alberta Bird Atlas requiring a large number of volunteers to be trained in censusing techinques, the Federation will be assisting in mounting local mini-training sessions, which though not conferences are promoting knowledge and aiding research, major items in FAN's mandate.

The *Alberta Naturalist* continues to be our best means of exchanging data between clubs and societies. Our editor and assistants do a good job with material submitted for arcticles, reports and general interest notes. We continue to have reservations about the number of tabular entries but if not published in the AN where are they going to be available to researchers in the future?

Conclusion. Nineteen eight-six has been a busy and productive year. Just how busy and productive can be seen by the Committee Chairpersons' reports from which I have touched on only the highlights.

Where do we go in 1987? Continue to press for a balanced regard for natural systems in all areas and among all levels. Support the Alberta Bird Atlas Project. Take our newly learned expertise in contacting the public to the smaller communities.

To borrow a phrase from the Edmonton Natural History Club "Think Globally, Act Locally". FAN could well say it thinks Provincially and acts locally.

Pat Clayton

Editor's Report

The *Alberta Naturalist* completed the third year in its new format in 1986. Financial constraints will force the publication of a shortened, "leaner and meaner" - looking *A.N.* in 1987. It is hoped that the increase in membership dues from $10 to $15 will lessen the financial pinch that the *A.N.* faces and at the same time not cause a serious drop off in membership. Maintaining the quality of the *A.N.* continues to be a problem with the chronic shortage of material to publish. An Editorial Board is being considered to alleviate some of the problems associated with the above. A team of four people with specific duties is envisioned. The board will consist of an Editor, whose duty is to assemble material for publication, edit it appropriately to follow the format developed for the *A.N.*, and generally oversee the entire process of publishing the *A.N.*; an Assistant Editor who will be primarily responsible for the solicitation of articles and who will take over the Editor's responsibilities when the Editor is away; a Production Manager to oversee the typesetting, layout, and printing of the *A.N.* ; and a Circulation Manager to coordinate the mail out of the *A.N.* and the *Alberta Bird Record* (including keeping Canada Post and their second class mail regulations happy!), maintain the membership list (in conjunction with the Membership Secretary), handle all correspondence related to the *A.N.*, and solicit advertising. A separate Book Review Editor, reporting to the Editor, has been appointed.

In my annual acknowledgements I would like to thank the Assistant Editors (Dick Dekker and Dave Ealey) for keeping things going while I was away, the mail out crew (Eileen Coffey, Pat and Dick Clayton, Dave Ealey, Marge Reine, Margot Hervieux, and Brenda Boughton), our indispensable Executive Assistant (Celeste Ference), the photographic section at the Northern Forestry Centre (Phil Debnam and Jim Baker), and all the contributors for their support of the *A.N.* over the past year.

1987 will be my final year as Editor. Because of frequent absences from the city over the summer, I do not feel I am giving the *A.N.* the time it deserves. With the exception of the ever-present shortage of original material to publish, the production of the *A.N.* now proceeds almost like a well-oiled machine. It is time for someone else to take up the challenge of editorship. We expect to be swamped with volunteers!

J. Derek Johnson

Wagner Natural Area Society 1986/87

Water License. A water license has been issued jointly to the Society and the Department of Forestry, Lands, and Wildlife. It gives the Society little protection, but amendments to it could give greater protection of water resources. The issuance of a license to "use" water in its "natural state" has created a precedent in Alberta.

Trail Opening Ceremony. 500 copies of a special commemorative issue of the trail guide were prepared for free distribution at the ceremony on June 7. Plaques acknowledging the generous support of the various donors were presented. 85 people attended. Representatives from the Blair Family Foundation, Xerox Inc., the Recreation, Parks, and Wildlife Foundation and the Edmonton Public School Board were in attendance. Gill Ford, Beth Jenkins, Peter Lee, Val Loewen, and Sandy Myers worked hard on preparations before and during the ceremony.

Field Trips. Visitation to the area is increasing as it becomes better known. The Nature Centre, Junior Forest Wardens, various outdoor groups, schools, the Orchid Society, and the Provincial Museum were all involved in field trips to the area. An "Amphibian Night" on May 8 saw 8 people out to listen to the calls of toads and frogs. In the neighbourhood of 1000 people visited the area during 1986.

Natural Resource Surveys. Terry Freidrich (a graduate biology technician from N.A.I.T.) was hired on a S.T.E.P. grant for the summer. He conducted a Breeding Bird Survey, a Water Level and Quality Survey, an updated Vegetation Survey (including a phenology study, identifying species new to the area, a lichen survey, a vascular plant and lichen successional study, mapping the location of the orchid species occurring at Wagner, etc.), a Small Mammal Survey, and area maintenance. A moss successional study has been suggested to be added to those already underway. A bird checklist for the area is being worked on. A proposal to establish a rare orchid monitoring program has been submitted. A request to conduct a snail study in the area has also been received. The Provincial Museum's insect study is yielding some interesting and important results. The proportion of certain wasp groups is much higher at Wagner than in most average collections. The Wagner collection is now one of the largest peatland insect collections in North America. Many publications should result from this work.

Management Plan. The best defence for the W.N.A. lies in public awareness of its value. The Society must keep the public and local residents well informed on what is being done and solicit feedback on our management plans. The draft management plan is currently under review by the Society.

Snowmobiling. The snowmobiling agreement has been signed. The Wild Orchid Recreation Society supports the W.N.A.S. request to the County of Parkland for the lease and closure of the Villeneuve road extension. Final approval has not yet been received from the County, but it is expected.

Beavers. A group of beavers have established themselves in a dugout on the west side of the area. Beavers are also present south and east of the area. Possible disruption to the Natural Area is being monitored, but for the time being, no direct action to remove the animals is contemplated unless they move further onto the property.

Trail Monitors. Society members have volunteered to check on the condition of the trail and facilities on a monthly basis, reporting any damage to the Public Lands Division.

Mobile Home Park. A large trailer park has been proposed for the area in the northwest corner of the Villeneuve-Highway 16X intersection. Alberta Environment is recommending that the County of Parkland refuse the development permit because of concerns with water supply, the site's high water table, adverse drainage, and the drainage pattern. The developer has been asked to demonstrate that the park would have no impact on the W.N.A.'s drainage or water table. The mobile home park issue has raised the Society's concerns about creating a buffer zone around the Natural Area, either through land acquisition or zoning regulations. Such a buffer zone has been suggested in the management plan.

Information Handout. A one sheet handout with a map of the W.N.A. on one side and a brief history and other basic information on the other has been prepared for winter use and as an alternative to the larger, more expensive trail guide. If approved by the Society, 1000 copies will be printed.

Garbage Dump. A large, old garbage dump is located on the portion of land added to the Natural Area east of the Villeneuve extension. This will require a fairly major cleanup effort.

Scentless Chamomile. Manual elimination of this aggressive weed has been undertaken to control it. Hopefully, this action will eliminate the need to use herbicides in the area in the future.

Conservation Kit. The recent publication of the Environmental Law Centre, *Conservation Kit: A Legal Guide to Private Conservancy* uses the W.N.A.S. as one of the case studies in the guide.

J. Derek Johnson

Committee Report - Wilderness, Parks and Natural Areas

Four Mountain Park Planning Program. This lengthy process is in its final stages. Corporate member clubs and individual members should make a special effort to respond to the draft management plans for each park which will be available soon. F.A.N. has written Environment Canada - Parks Minister Tom McMillan to inform him of the resolution adopted by the Board of Directors at the September 13, 1986 meeting in Brooks. That resolution demanded precise and immediate limits to the growth of accommodation and related facilities in the mountain parks.

Grasslands National Park. The inability of the federal government and the government of Saskatchewan to reach agreement on ultimate control over water rights for the Frenchman River appears to be the major stumbling block impeding establishment of this important segment of the national park system. F.A.N. has written both governments to urge a speedy resolution, with the 1987 Centennial of Wildlife Conservation as an appropriate target date.

South Moresby. This was to be Mr. McMillan's priority for new parks. Logging continues on Lyell Island. Obviously the Minister has been unable to generate the kind of cabinet support he needs to present a strong enough case to the government of B.C. that this internationally significant region deserves full protection.

Ellesmere Island National Park Reserve. The fact that the politics of establishing new national parks in Canada's Territories may be less complicated than those involving the provinces should not diminish the importance of adding Ellesmere Island to the system. Mr. McMillan deserves congratulations for his efforts in this regard and for the designation of Polar Bear Pass National Wildlife Area.

Amendments to the National Parks Act. This process should be watched closely. Although the intent and direction of the proposed changes are generally positive, there are some concerns. For example: when is wildlife not wildlife? Answer: When it is not included in the list of only 9 species listed in the schedule defining wildlife for the purposes of the poaching provisions. Poaching a Bighorn Sheep could lead to a maximum penalty of $150,000.00. Poaching a trophy Elk could lead to a maximum penalty of $2,000.00. There are some loose ends that need to be tied up before these changes to the Act are as worthwhile as they could be.

South Castle. Now is the time, with the decision of Shell Canada to forego the sour gas exploration well in the headwaters of the South Castle River, to the immediate north of Waterton Lakes National Park, to push for positive protection of this area. Designation of a Wilderness Natural Area would provide the necessary safeguards while permitting appropriate use.

Upper Oldman. The integrity of southern Alberta's relict old growth forest should not be sacrificed to a marginal logging operation. There are sound environmental and economic reasons why this area should be left intact.

Bighorn Wildland Recreation Area. Forestry, Lands and Wildlife Minister Don Sparrow announced the Bighorn W.R.A. just prior to the last election. Although management details are sketchy, a positive sign appeared when four Forest Land Use Zones restricting vehicle traffic within the Bighorn were given long term status late last year. If this is to be a genuine Wildland Recreation Area it will have to exclude all motorized access and industrial development.

Ecological Reserves. Recreation and Parks Minister Norm Weiss and the Hon. Don Sparrow made a joint announcement in December 1986 of the government's intent to establish Alberta's first ecological reserves. The four proposed sites are: Marshybank, Crow Lake, Whitemud Falls, and Silver Valley. This is a welcome step and the government should be congratulated. But there is much more to be done.

Some Random Thoughts. An official of Environment Canada - Parks recently reminded some executive members of the Bow Valley Naturalists that when submissions to the Four Mountain Park Planning Program are considered by the planning team, letters or briefs from groups and organizations are weighted the same as similar input from individuals. This is absurd and stupid, but it is a fact of life and probably applies to many other situations with which F.A.N. people are involved. There is no point in cursing the system as it stands. The message is clear! Somehow individual members must be encouraged and motivated to express their opinions. They must be convinced that their contributions are meaningful and essential.

And our targets must be more clearly identified! It is obvious that whether the issue at hand involves national parks or provincial ecological reserves, governments make decisions through caucus consultation. M.L.A.'s and M.P.'s represent the people. We may all believe in the importance of establishing an ecological reserve for the Milk River Canyon, but if the M.L.A. for the area argues against it, success is unlikely. Tom McMillan may feel strongly about South Moresby National Park but if western Conservatives are indifferent or hostile to the idea, it will not fly. At the same time that we are pin-pointing specific Ministers who bear specific responsibilities we should be in regular contact with our local M.L.A's and M.P.'s. This will have the effect of clarifying and strengthening the conservationist position on issues while, at the same time, adding impetus to the attitudinal changes that will lead to long term solutions.

Mike McIvor.

Environmental Education Committee

The Environmental Education program in 1986 was simple. Monies were provided for the Ministik Hills Summer Children's Nature Camps. Two instructors were hired by the director, Lois Fenna, to enhance the program in areas that she felt needed more expertise. Each instructor came for both the camps. Lois felt the instructors were very helpful and thanked F.A.N. for funding the project.

In 1986 further funding was initiated to begin work with a student on the PEP program to design and complete bulletin boards for the provinces nature centres. This project is nearing completion. A slide program of F.A.N. and its purposes and goals is also being prepared. This program will be displayed on a new caramate projection unit, both funded by this grant.

Marg Reine

Annual Report - Clifford E. Lee Nature Sanctuary

The Sanctuary was in full operation in 1986 with all aspects running smoothly and in a fashion which the management committee considers to be fulfilling our mandate. There was no capital development of the property this year, with the exception of some fencing in the north quarter and along the south boundary of the 8 ha parcel which we lease. This was accomplished through the Bucks for Wildlife grant.

Maintenance was minimal and carried out by volunteers, mainly from the mangement committee. Two work parties repaired fences, erected signs and around the 8 ha park reserve on our south boundary, planted grass on the northeast corner where the County of Parkland had removed trees and earth to improve visibility at the intersection, repaired a sinking section of the boardwalk, cleaned up litter, trimmed and pruned the paths, mowed grass, and painted the new toilet. During the summer Sandy van Stolk emptied the litter containers and looked after the outhouse. Lu Carbyn monitored visitor usage.

Resource Management involved burning a substantial portion of the meadow with the cooperation of Chuck Ogilvie from the Canadian Forestry Service. Two new goose nesting rafts were put out with the help of Ducks Unlimited. The north section pasture was again grazed and mowed.

Interpretation was more active this past year. We ran a series of workshops on a variety of topics including birds, plants, marsh, and sand dune ecology. Leaders were paid an honorarium. As well there is a group of educators that are using the Sanctuary each year for courses they regularly teach. These include classes from local schools, groups from the scouting and guiding movement and adult education classes. Unfortunately, the exact number of users in each group is not known as they do not always report their numbers.

We have developed a constituency of users which appears to be compatible with the objectives of the Sanctuary and our ability to serve users. This year for the first time we operated an unmanned visitor registration site. Over the summer months (May through August) approximately 1600 visitors used the sanctuary. This estimate does not include regular users, which do not always register, nor does it include the group users. The typical user seems to be small numbers of adults or adults and children.

Bill McKay and Marg Reine

Report on 1986 Federal-Provincial Wildlife Conference, Ottawa.

This meeting was high-powered just like the other Federal-Provincial Conferences you may have seen on television. The same enormous ballroom, simultaneous translation, and all the frills.

The list of participants included ministers and directors of wildlife departments and the heads of most wildlife organizations. I was fairly intimidated until I got to chat with some of them.

These people update each other on what their organization has accomplished over the last year. This opportunity to trade ideas does not seem to exist in most other government departments.

The conference theme, 'Canada's Role in World Wildlife Conservation' received considerable attention in smaller workshop sessions. Many good ideas came up, although most could only be acted on by the Federal government. Reports were made by several international wildlife agencies.

Throughout the meetings, the World Conservation Strategy constantly came up. This concept has really captured the attention of the wildlife agencies. F.A.N. and other naturalist organizations can take a leading role here by using the W.C.S. to bring conservation into the mainstream of Canadian life. However, we must first become familiar with the strategy. Some items may be contrary to a naturalist's usual position.

I also attended several social events, the highlight being a formal banquet held in the Parliament Building. After the dinner, Senator Belisle conducted a personal tour of the Senate chambers.

The major concern expressed was the complete lack of publicity given the conference. Next year, considerable effort will be made to let the public know what is going on.

I feel I was able to contribute quite a bit to the conference. Non-consumptive users of wildlife were poorly represented so that point of view helped keep the proceedings in perspective. I also discussed with several senior people, the need for effective land-use management as the key to conservation. Saskatchewan and Ontario wildlife ministers were both interested in hosting a workshop on this topic. I suggested tying it in with the Wild West program, and their efforts to involve farmers in nature conservation.

Rob Gardner

Finance Committee Report

As in prevoius years, the major task of the Finance Committee was to file grant applications on behalf of the Federation. A number of meetings were held to complete and file applications for: 1. Alberta Recreation and Parks and the Recreation, Parks and Wildlife Foundation grants. 2. Alberta Culture Publications Assistance Grant. 3. Alberta Culture Historical Education grant (to cover directors' expenses for board meetings).

The R.P.W. Foundation grant provided funding for production of a slide/tape program promoting FAN and a PEP grant was obtained late in the year to enable this program to be produced in early 1987. The PEP employee will also construct a set of "display boards" to be distributed to nature centres throughout the province.

The concept of an Alberta Bird Atlas was revived in 1986 and FAN received $3000 from the Canadian Wildlife Service to prepare a proposal for an Atlas project beginning in 1987. A more concise version of the proposal was later prepared and submitted to the R.P.W. Foundaton to try to obtain long-term funding. The Foundation has agreed to supply initial funding in the amount of $42,000.

Again in 1986, FAN was fortunate to have funding for an Executive Assistant, Celeste Ference, and made full use of her in carrying on a number of tasks relating to FAN projects as well as day-to-day administration. Although Celeste was intially funded only for 3/5 time, it became apparent that we could use her services full-time and for much of the year we were able to do so by using various project funds to "top up" her salary.

Total income in 1986 was about $10,000 greater than anticipated in last year's budget, this in spite of receiving about $6000 less than we had hoped from the R.P.W. Foundation. The reason was several unexpected projects such as the Atlas proposal ($3000.) and Burrowing Owl Project ($4000 from W.W.F.) and also the huge financial support received for the Endangered Species Workshop. Any excess funds remaining after staging such workshops will be used to support future workshops or conferences.

Expenditures, likewise, were higher than budgeted in 1986, due again largely to unexpected projects like the Bird Atlas and Burrowing Owl project.

The proposed budget for 1987 is similar in magnitude to the 1986 budget. However, it is proposed to significantly increase spending on paid staff - from about $14,000 (incl. benefits) in 1986 - to about $24,000 in 1987. We particularly hope to make the Executive Assistant a full-time position, which is clearly justified by experience during the past year. We also hope to employ the equivalent of 9 months of STEP/PEP funded persons to assist with the Habitat Display program, our membership drive and promotion of the 1988 workshop. The cost of this added personnel will be offset by increased membership dues and, we hope, increased membership in 1987 and increased funding from the STEP/PEP programs. At the same time, we are hoping to hold the costs of producing the *AN* to their 1986 levels, despite increased circulation.

Although the proposed 1987 budget is "balanced", FAN remains vulnerable to any sudden reduction in funds by one of our major funding sources. It is therefore intended to pursue new funding sources in the coming year.

Dave Cuthiell

Alberta Bird Atlas Project Report

Following the Endangered Species Workshop in January, 1986, the Federation was asked to take part in censusing the avian fauna of the province. With the expertise and field experience of FAN's AORC, Christmas and May Day Count members available, the Executive agreed to meet with representatives of the Provincial Museum of Alberta, Canadian Wildlife Service and Fish and Wildlife.

At the Board Meeting in May the Executive reported that FAN had agreed to put together a proposal that would address the methods, recruitment, funding and management of such a large project. At the September meeting copies of the proposal that had been accepted by Alberta Fish and Wildlife and the Canadian Wildlife Service, Endangered Species were made available to all Corporate Clubs and interested persons. Acceptance notice was given that the Alberta Bird Atlas Management Committee would be requiring a co-ordinator for the project.

The Federation was paid for the Alberta Bird Atlas proposal ($1,500 each from Alberta Fish and Wildlife and Canadian Wildlife Service). The directors who actively took part in the meetings called by the Executive to discuss and to submit information were paid honorariums. All office and printing costs and later the legal costs related to a contract were paid from this source. The balance of $1,434.55 was transferred in January to a separate current account with the same signing authorities as our regular account.

The Federation as a non-governmental, non-profit organization placed the ads for the Atlas Co-ordinator. The Management Committee screened and interviewed the applicants which was a task complicated by the fact that fund raising and interpersonal skills were high priority - most applicants' strong points were in field work.

The Co-ordinator (to be called Executive Director) was selected in December, a contract was legally drawn up and signed between the Executive Director and FAN with the starting date of January 1st, 1987. Funding for the first three months in 1987 was provided by C.W.S.

For 1987 the Federation will receive and bank monies raised by the Executive Director for the Atlas and act as the project paymaster.

The Management Committee consists of:
Alberta Forestry, Lands and Wildlife, Non Game Unit: Doug Culbert (Chair). Canadian Wildlife Service, Endangered Species: Geoff Holroyd. Federation of Alberta Naturalists: Pat Clayton, Margot Hervieux.

The Technical Committee consists of:
Alberta Culture, Provincial Museum of Alberta: Bruce McGillivray. Alberta Forestry, Lands and Wildlife: Peter Boxall. Canadian Wildlife Service: Loney Dickson. Federation of Alberta Naturalists: Doug Collister.

The Executive Director for the project is John (Jack) Clements. His office is in the Provincial Museum.

Philip Stepney.

Restoration Plan For Woodland Caribou In Alberta

Dear Mr. Sparrow:

In order to clarify the Federation of Alberta Naturalists' position on the above plan, and to provide you with a more thorough accounting than will be possible through the next Advisory Council meeting, we are submitting the following brief. Please note that our position has been based upon a wide review of the biological facts and opinions as to the circumstances of the caribou-wolf system of the Willmore-Berland area and northern Alberta, and also upon our basic philosophy of holistic wildlife management, not merely single-species production.

We are fully in support of your department's objectives to attempt a resolution of the difficult problem of restoration of the declining caribou. We feel that the caribou restoration plan has many good ideas that will go a long way to bring about the recovery of the caribou throughout Alberta, but we are reluctant to support wolf removal as any part of the solution. Our concern is based upon many unanswered questions about the wolf-ungulate system of the Willmore-Berland region in particular, and the caribou across northern Alberta in general.

Willmore - Berland Region

- What recognition is given to the fact that a wolf kill in the summer range of the Berland caribou is bound to affect the protected wolf community of Jasper National Park directly? The wide-ranging behaviour of wolf packs is well known, specific examples of pack ranges that overlap the Jasper National park boundary and wild lands of the Eastern Slopes have been established by Schmidt and Gunson recently.
- Does the Alberta Fish and Wildlife Division not recognize the importance of untampered predator-prey systems for the appreciation of Alberta's wilderness lands and adjacent National Parks? The very essence of these lands is their untouched character and it is that character which attracts the true wilderness enthusiast.
- What happens if the 70% wolf kill program is put into effect and the caribou continue to decline or at least not recover to the predicted levels? Would the elimination of all wolves in the mountain caribou range occur? Would the "discovery" that other predators such as Grizzly Bear and Cougar occasionally take caribou lead to removal of those predators too?
- What is the Fish and Wildlife Division's plan

regarding the concurrent increase in elk, moose and deer that would surely follow the wolf control? These species have higher potential rates of increase than seem likely for the caribou. Ungulates can very rapidly overbrowse their range if natural mortality does not keep adequate pressure on the population.

Would the increased population of these latter ungulates be used as an excuse to send in additional hunters? A major part of the caribou problem is their vulnerability to human disturbance, traffic mortalities and the inevitable honest (?) mistakes of identity made by hunters ignorant of the difference between caribou and elk. Sending increased numbers of hunters into the area could defeat the restoration plan's objective.

Northern Alberta Caribou

- Are the longer-term objectives for the caribou population (5,100) in northern Alberta realistic? We have abundant doubts, given that

(a) the former levels of 7,000 - 9,000 were reported for a time that was immediately after a broad-scale wolf elimination program.

(b) the extensive oil and gas activity and agricultural expansion of northern Alberta have brutalized the habitat for the caribou and has likely affected or will affect the traditional migratory pathways of these animals.

(c) several major fires in northern Alberta in the early 1980's have affected large tracts of caribou habitat and it will be a matter of many decades before that old-age habitat is restored.

- If the objective of restoration efforts is to ensure the long-term survival of the caribou, then it must be with an *intact* predator population, for without these predators, the caribou would not have evolved to the symbol of wild lands that it is today.

Predator - Prey Systems in General

Large tracts of Alberta exist with none of the significant predators of large ungulates. These areas enjoy substantial populations for recreational hunting. Other areas have some predators but have productive habitats which keep the ungulates at levels higher than can be controlled by those predators. These latter areas also provide substantial recreational hunting opportunities. Some areas appear to have low ungulate populations that can not expand supposedly as a result of substantial predation (e.g. Nordegg - Brazeau elk population), but those same areas also have aging habitat which favours other species than those specifically sought. Wolf populations naturally decline to match the available food supply, and observations of wolves in Jasper National Park have demonstrated that such a predator decline has already taken place.

We have, therefore, a well-balanced predator-prey system in areas that lack the capacity at present to expand or to allow enhanced ungulate populations. Isn't it about time that recognition is given to the instrinsic value of a naturally-balanced predator-prey system? The artificial calculation of supply/demand curves has very little to do with sound wildlife management, particularly when the management system merely serves to provide a commodity to satisfy unrealistic demands.

You might just as well fence off the wilderness, remove all predators and declare an open season; you could certainly satisfy your supply/demand objectives for game species. But you would be missing the point. Wildlife appreciation should not depend upon providing a zoo-like concentration of wildlife upon demand, but upon a supply of unfettered habitat for all wildlife species.

We would encourage you to proceed with the following:

(1) continued study of all facets of the population ecology of the Willmore - Berland caribou,

(2) establish reliable estimates of caribou throughout their range in northern Alberta,

(3) identify the impacts of human activity upon the caribou use of habitat,

(4) refine estimates of carrying capacity of northern habitat based on distribution of both summer and winter range,

(5) implement educational programs to ensure the killing of caribou by recreational hunters is halted,

(6) step up efforts to reduce poaching,

(7) solicit support of the native community to halt so-called subsistence hunting of caribou,

(8) reduce the impact of hunter/caribou encounters by implementing the caribou sanctuary zone along Highway 40 and Huckleberry Fire Tower Road,

(9) identify the level of mortality that the Willmore - Berland herd suffers in British Columbia,

(10) put into effect immediately the guidelines for industrial activity in caribou range and establish compliance with forestry guidelines,

(11) put into effect the general public educational programs, but with consideration of the importance of wolves as a major component of the northern wildlife community,

(12) initiate studies on the long term monitoring of lichen regeneration.

We still maintain, however, that implementation of a wolf kill program will not allow wildlife managers to determine whether habitat and human-oriented management tools are effective. The results will be clouded by the disruption of the predator-prey system of that area. We will not support the wilf-kill portion of the Caribou Restoration Plan.

We thank you for your attention to our concerns.

Sincerely,
Pat Clayton, President, F.A.N.
David M. Ealey, F.A.N. Representative, Fish and Wildlife Advisory Council

---

Dear Mr. Ealey and Ms. Clayton:

Thank you for your letter of December 7, 1986 outlining your concerns, objections, recommendations and support for various aspects of the Woodland Caribou Provincial Restoration Plan. I appreciate the time and thought put into this letter and offer the following response that attempts to consider all your points.

Willmore-Berland Region

Meetings with the Warden Service and the Assistant Superintendent of Jasper National Park have begun. The Park is aware of the proposed management strategies to recover the mountain caribou herds (a shared resource) and restoration of those herds is of great importance to that agency. The Alberta Fish and Wildlife Division and Jasper National Park are committed to continue discussions in an attempt to resolve any differences in philosophies and/or mandates respecting management programs to be implemented to recover these herds.

The wilderness lands of Jasper National Park and Willmore Wilderness Park are adjacent to land that has been severely altered by man's activities for at least 20 years. The mountain caribou (and possibly the wolves) in this region do not recognize park boundaries as sanctuary zones but roam over more than 13000 km^2 of country and spend up to 7 months on lands outside of the parks. All aspects of the natural system have been tampered with; and to assume that major changes in habitat, public access and hunting pressure has little or no effect on predator/prey systems is faulty. We have made a variety of management recommendations in the Restoration Plan to mitigate the effects of habitat, access and hunting changes and it would be irresponsible on our part to ignore data that show the present predator/prey system is detrimental to caribou.

If caribou herds were not to respond to wolf reduction (increased calf and adult survival) we would not recommend elimination of all wolves. During the research study of mountain caribou, we identified bear predation as a component of the total natural mortality (Edmonds and Bloomfield 1984) but as it was significantly less than wolf-caused mortality we have not recommended that bear numbers be reduced. Wolf predation on radio-collared caribou was not "occasional". Fifty percent of mortalities were due to wolf predation.

It is not our intention to eliminate predators from the system or to reduce their numbers indefinitely. It is recognized that a 4 to 5 year respite from predation will improve the growth rate of all ungulates within the wolf-reduction area. Hunting will still exist as a regulating factor for the other cervid species during the period of wolf reduction and the occurrence of overbrowsed range in northern Alberta is a rare occurrence, outside of fenced situations such as Elk Island National Park. Your concern that more hunters will pour into the area is unlikely, however, the success rate of hunters is likely to increase. Establishment of a wildlife sanctuary along major travel corridors should help to minimize, if not eliminate, intentional or accidental shooting of caribou (85% of all man-caused mortality occurred within 50 m of a road) as would restriction of public use of new and existing access within core caribou range.

Northern Alberta Caribou

Our goal for a population of 5100 caribou throughout northern and west central Alberta is a conservative one. This population size results in a density of 3 caribou/100 km^2 and Bergerud *et al.* (1983) report maximum densities of 20 to 100 caribou/100 km^2 for major herds in North America where wolves are present. We have recognized that a variety of factors, such as habitat loss or alteration or controlled predator populations, would make it unlikely that we could maintain caribou herds at optimum carrying capacities, therefore our population goals are conservative.

The "broad-scale wolf elimination program" referred to in your letter was an intensive 1½ year trapping program to decrease all wildlife that were potential carriers of rabies (this was a rabies control program) and less intensive trapping continued for another 2 years. Substantial numbers of wolves were killed and indeed caribou numbers probably increased in response to low levels of predation. The effect of agriculture on caribou habitat has been minimal; caribou habitat is not characterized by soil types suitable for agricultural crops. Again our population goal is a very conservative level for the habitat carrying capacity. In general, we are in agreement that a population of 9000 caribou is not realistic within the present context. We are also in agreement that a caribou population in Alberta should co-exist with an intact predator population, however, it is likely that we differ as to an acceptable ratio of caribou: wolves, particularly when caribou herds are continuing to decline in the face of high levels of wolf predation.

Predator-Prey Systems In General

Almost 2/3 of the province of Alberta supports a wildlife community that includes wolves as a component. Our recommendation to reduce wolves on the caribou range of west-central Alberta is intended to reverse the continued decline of these herds and ensure their future existence, not to provide more caribou for recreational hunting (hunting has been closed since 1981). Habitat is not limiting these herds. Studies from British Columbia, where small herds of woodland caribou share the same range with moose, strongly suggest that caribou are more vulnerable to wolf predation. Caribou can continue to decline and even disappear and wolf numbers will show little change, being supported by moose or other alternative prey (Dale Seip, University of B.C. pers. comm.; Bergerud and Elliot 1986). Our data indicate a similar situation exists in west-central Alberta.

The management of these herds requires that all factors limiting their growth be addressed and the Restoration Plan recommends strategies to maintain and protect habitat, minimize man-caused mortality and reduce high levels of natural mortality. Our objective remains, to allow for a recovery of the mountain caribou herds by using all tools or techniques at our disposal. We do not feel we can afford to test each variable one at a time - time is of the essence.

The Fish and Wildlife Advisory Council has recently endorsed the Woodland Caribou Provincial Restortion Plan. The Fish and Wildlife Division, which is responsible for implementation of the Plan, will continue the public awareness, habitat management and enforcement activities identified in the Plan. These efforts will be augmented by additional studies of caribou and wolf interaction. The government of Alberta will not consider a government wolf management program until all other options to recover the caribou herds have been pursued.

Your recommendations and suggestions on improving the strategies of the Restoration Plan for Woodland Caribou are appreciated. While recognizing your opposition to wolf reduction, we appreciate the support you can give us in managing caribou habitat and minimizing man-caused mortality.

Yours truly,
Dennis C. Surrendi, Assistant Deputy Minister.

CLUB NEWS

Red Deer River Naturalists' Society

One short year ago we gathered to conduct the business of the 1985 annual meeting, including the election of officers for the coming year. Following the business of the meeting, we were treated to an audio-visual holiday to the Galapagos Islands with our member Don Wales.

Also in January, RDRN members attended the Alberta Environmental Network Conference. Out of this grew the Promote Environmental Priorities campaign which was to be directed at MLA candidates across the province for the election. The same month, members of the Board met with representatives of the Alberta Mediation Society regarding the Sylvan Trail Project. On the 28th, a public meeting was held to discuss the formation of the Kerry Wood Nature Centre Association.

February - our first meeting in our new home - the Kerry Wood Nature Centre. Rob McIntosh, an environmental activist from Drayton Valley reviewed for us a spectrum of local, regional and national environmental issues, and gave us ideas about how to approach them.

In March, members once again participated as judges in the Central Alberta Regional Science Fair. The RDRN once again donated and presented prizes in various categories. At our monthly meeting, Dick Dekker, a widely acclaimed expert on birds of prey, spoke about peregrine falcons.

In April, just as we were beginning to feel the warming rays of spring, we were fortunate to have as our monthly guest speaker here at the Kerry Wood Nature Centre, Dr. George Scotter, an internationally known CWS scientist, who spoke to us about the Northern National Parks, and the Canadian Arctic. Also in April, the Kerry Wood Nature Centre Association held its inaugural meeting. We also began our busy summer outings schedule in April with a trip with the Larsens to the Tyrell Museum of Paleontology. Members also attended public meetings on waste recycling held here in Red Deer.

During the months of June and July, the members were busy with a summer outings schedule that is the envy of naturalist's organizations across western Canada. There were 39 summer outings this year, with the last outing stretching the definition of summer to the limit with a trip to Glacier National Park November 12-16 with Bill Nesbitt to see the Bald Eagles. In July, the Kerry Wood Nature Centre Association and the Red Deer River Naturalists cooperated to produce a special issue of the famed Central Alberta Naturalist to commemorate the opening of the Kerry Wood Nature Centre.

And in August it opened! On a gorgeous summer day on August 4, hundreds of people gathered here to join in the opening of the Kerry Wood Nature Centre. Kerry Wood himself attended the ceremonies - an unforgettable day for many of us. The dedication of the McKenzie Trails was also held that day. The hot summer weather that day preserved the visitors from the annoyance of mosquitoes, but it was not so for most of the rest of the summer, and by mid August, the annual "to spray or not to spray" debate was in full swing. Your President made a presentation to City Council in response to a petition presented by a group of doctors, who were asking for a spraying program. City Council decided to form a committee to study the issue, and we were able to appoint a naturalist to represent us on the committee. The committee, swayed more by politics than reason, chose to recommend to City Council that a spray program be introduced. Fortunately, in October, City Council saw the folly of such a program and chose not to spray. The mosquito issue was not over yet however, and in November, even as winter was upon us, Alderman Connelly pressed for a review of the spray issue. The City Council wisely voted against reviewing their previous decision. Your Executive will be forever on the lookout for that dangerous species - the *Yellow-bellied mosquito sprayer*, and whenever we find one, we will STAMP IT OUT! I certainly stamped out more than a few mossies myself as I joined Jim Robertson and Ted Johnson at the invitation of the City to tour the as yet unopened golf course to provide a naturalist's perspective on the plans for nature trails around the perimeter of the course.

In September, our Annual Banquet attracted 101 people to share good food and good fellowship at the Club Cafe where Richard Fyfe entertained those present with a program about peregrine falcons.

October was the month of the Great Bird Seed Sale - a cooperative effort between the Red Deer River Naturalists and the Kerry Wood Nature Centre Association. Over 1000 people passed through the Kerry Wood Nature Centre the first day. Also that month, we learned that our application for a licence of occupation for the Butcher Creek Natural Area, which we assumed must be almost moldy by now had actually been cancelled by the government without even notifying us! It was quickly and forcefully resurrected, and I am pleased to say has *finally* been *approved!* It was a busy month. I and other representatives of the RDRN attended a meeting regarding the designation of the ACR bridge as an Historic Resource. As a result of the meeting, government representatives have resolved to meet with local landowners who are in opposition to the preservation of the bridge to convince them of the necessity of preserving the bridge for future generations to enjoy. That same month, Ken Larsen was appointed as the first Red Deer River Naturalists representative to the Museums Management Board. Later that month, Dr. David Dickson took our minds off mosquitoes with a delightful presentation on summer in the Mackenzie Mountains area of the Northwest Territories. Jim Potter, Michael O'Brien, Slim Davis and I spent a day at the Schrader Lake Heronry on an RDRN project to fence the heronry trees from marauding beavers.

In November, your Executive wrote the Assistant Deputy Minister for Lands and Forests, Dennis Surrendi to present our thoughts about the proposed wolf kill in Alberta. The local organizing committee for Wildlife '87 met to discuss ideas for the coming year. At the November meeting, the Red Deer River Naturalists celebrated their 80th anniversary, and Lorne Scott, from Indian Head, Saskatchewan described to us the success of several conservation projects in his province.

December - the month we froze our tushes for the birds. Thanks to the efforts of several Red Deer River Naturalists members, notably Myrna Pearman, the '86 Bird Count was an outstanding success. The Bird Count this year was an unbeatable kickoff to the events of Wildlife '87, and due to the tremendous media coverage we received (including the CBC National News), birds and the RDRN became very much more widely known.

Sandy Murray

Edmonton Natural History Club

Executive for 1987:

President: Geoff Holroyd. Vice-President: Mike Quinn. Treasurer: Barb Smith. Secretary: Pat Crossley. Past President: Dave Cuthiell. Directors: Jim Lange, Loney Dickson, Liz Stinson, Marg Lewis, Larry O'Brien, Tanya Davies, Gerry McKeating, Darwin Wiggett.

Meeting are held in the auditorium of the Provincial Museum at 8:00 p.m. on the second Tuesday of the month from September to May.

Club membership remains steady at about 130.

The Club's 1986-87 schedule of indoor meetings began on September 9 with a presentation by Tom Branch. He showed many interesting slides, primarily of invertebrate life, both terrestrial and aquatic. His macrophotography gave us a close up glimpse of some rarely seen aspects of pond life. The October and November meetings were held in conjunction with the Canadian Parks and Wilderness Society (C.P.A.W.S.) as part of their 1986-87 Nature Lecture Series. The topic of the October meeting was Grizzly Bear Biology with Dr. Brian Horejsi. He presented numerous facts on an animal he has studied for several years throughout its range in Alberta. At the November meeting Cleve Wershler gave one of his usual excellent presentations on Arizona and some of its wildflowers, entitled "Painting the Desert." The combined attendance for the October and November meetings was about 430 people, a record for the club in recent memory. In December, Liz Stinson showed slides of her recent trip to Australia. Having arrived just after their coldest and wettest winter in many years, her slides showed a lusher and a greener landscape than what one might normally expect to see at that time of year.

At the Club's Annual General Meeting and Members' Night on January 13, Dr. Kerry Wood from Red Deer was presented with the 12th annual Loran L. Goulden Memorial Award. After the award presentation several members gave short slide presentations sharing some of their natural history experiences. The February and March meetings were again joint meetings with C.P.A.W.S. The February topic was Whooping Cranes. Ernie Kuyt of the Canadian Wildlife Service showed slides and the film "Cranes of the Platte River." In March the monthly meeting featured "Rockies in Bloom: Wildflowers of the Canadian Rockies", an evening with Dr. George Scotter, featuring the photography of Halle Flygare. The wildflower tour of the Rocky Mountain national parks was one of the highlights of the season. "Edmonton's Urban Wilderness" will be the subject of the April meeting. Gerry McKeating and other members of the Natural Areas Group will take the members on a pictorial tour of Edmonton's natural areas. The final meeting of the season, on May 12, will be a presentation by Dr. Bob Nero on "The Great Grey Owl, Phantom of the Northern Forest." Aspects of this 8 year study will be presented using slides from over 18 different photographers.

The Club, in association with the Edmonton Bird Club and the Provincial Museum, again cosponsored a series of Outdoor Adventure Films shown at the Provincial Museum. The season schedule included: November 1, "Odyssey of a Naturalist", by Fran William Hall; December 6, "Grizzlies of the Great Divide", "High Arctic Close-up", and "Survivors of the Shortgrass", by Albert Karvonen; January 17, "Adventure High Arctic", by Edgar T. Jones; February 13, "Summer in Kiwi Land", by Grant Foster; and March 14, "America's Wildlife Heritage", by Allen King.

The Great Grebe Tour to Elk Island National Park, co-hosted with the Friends of Elk Island Society, was one of the season's best-attended field trips, with over 75 people. The fall and winter field trip season, in conjunction with the Edmonton Bird Club, began on September 28 with a bird trip to Beaverhill Lake. A supper and a slide talk by Mike Quinn, titled "Summer Adventures at Beaverhill Lake", followed the field trip. On October 12, a mammal walk along the White Spruce Trail in Elk Island National Park took place. A cross-country ski trip to the park occurred on December 14. The Christmas Bird Counts began on December 21 with the Wabamun count, followed by the Edmonton count on December 27, and the Elk Island count on January 3. The Edmonton count set all-time C.B.C. records in five categories.

As part of its contribution to Wildlife '87, the Club has initiated a major new project to identify and protect Edmonton's Natural Areas. A meeting of the Natural Areas Committee took place on January 20 at the John Janzen Nature Centre, at which time a steering committee to oversee the project was formed. A new Bird Study Group has also been initiated by the Club. The first meeting of this group took place at the Provincial Museum on January 27. The identification of winter finches was the topic for the evening.

J. Derek Johnson

Edmonton Bird Club

Membership in the Edmonton Bird Club is still around the 100 mark and is ably being led by Jim Lange as President and John Allen as Vice-president. Meetings continue to be held at the Tory Building, University of Alberta, every 3rd Friday of the month between September and April. Guest speakers provide talks on interesting topics. At its December meeting, the E.B.C. co-hosted an Introduction to the Birds of Christmas, which without a doubt led to the most successful Edmonton Christmas Bird Count ever and a new participation record for North America.

The Edmonton Bird Club has published the Annual Report of the Beaverhill Bird Observatory. The report is chock-full of interesting bird records and is available from the club at $1.00. Send a self-addressed, stamped envelope to the Edmonton Bird Club, Box 4441, Edmonton T6E 4T5.

Margot Hervieux

Lethbridge Naturalists' Society

The fall program got underway with the annual potluck picnic held September 7 at the Lethbridge Agriculture Centre picnic site. The highlight was the presence of 2 young Rough-legged Hawks and a Prairie Falcon, brought by Colin Weir and Wendy Slaytor, who operate their Raptor Rehabilitation Centre at Coaldale. After supper, Colin and Wendy gave a flying demonstration with the 2 young Rough-legged Hawks. Then a few members enjoyed a short hike to nearby Jail Lake to check out resident bird life.

October 17 was the Annual General Meeting, at which officers were elected for the coming year. Also it was Members' Night for which various members brought their slides to show the others.

The Executive for 1986-87 is:
President: Bill Brown. Vice President: Bob Hall. Recording Secretary: Mike Vandyk. Corresponding Secretary: Liz Hall. Treasurer: Frank Russell. Directors: Lois McKillop, Diana Williams, Audrey Davidson, Wendy Slaytor. FAN representative: Graeme Greenlee. Social convener: Betty Luco. Newsletter editor: Teresa Dolman.

The November 14 meeting featured Mr. Peter Davidson of the B.C. Dept. of Wildlife, speaking on the Management of Bighorn Sheep Populations in the East Kootenays.

The Lethbridge Christmas Bird Count was held on December 27. Slides were shown on the many conservation activities going on in our area, and a wine and cheese party wrapped up the evening. Wendy Slaytor and Colin Weir brought some birds, including Burrowing Owls, from their Raptor Rehabilitation Centre at Coaldale.

The Waterton Christmas Bird Count was held January 3.

The January 9 meeting featured Dr. David Hammer, from the Environmental Sciences Program at the Lethbridge Community College, speaking on the Grizzly Bear.

At the February 13 meeting, Dr. Dennis Gaudet of the Agriculture Canada Research Station at Lethbridge spoke on "Great Mushrooms I have known."

On March 13, Malcolm Stark, of the Lethbridge Community College, will talk about Rattlesnakes.

Tentative for April 10 is Dr. George Scotter, of the Canadian Wildlife Service in Edmonton, to speak on Wildflowers of either the Canadian Rockies or the High Arctic.

The highlight for May will be the May Species Count.

Meetings are held on the second Friday of the month, 7:30 p.m., Room 1028, Cousins Building, Lethbridge Community College, 3000-College Drive South, Lethbridge, Alberta.

Graeme Greenlee

ANNOUNCEMENTS

Reclamation Targets for the 1990s

May 4 and 5, 1987, Westin Hotel, Edmonton.

Reclamation of disturbed lands is gaining importance as more activities affect our physical environment. What are the current trends and future needs for reclamation in Alberta? Three Alberta societies; the Alberta Society of Professional Biologists (ASPB), and the Alberta chapters of the Canadian Land Reclamation Association (CLRA) and the Canadian Society of Environmental Biologists (CSEB), have agreed to jointly sponsor a symposium on this interesting topic. Sessions will examine trends and future needs for reclamation in urban, agricultural, industrial and natural environments.

For more information, contact Chris Powter, c/o Alberta Environment, Research Management Division, 14th floor, Standard Life Building, 10405 Jasper Ave., Edmonton, Alberta T5J 3N4 (403) 427-4380.

Operation Lifeline

Operation Lifeline is an educational program offered by the World Wildlife Fund Canada, featuring Canada's Endangered Species. This environmental education program has two main objectives: first, to acquaint young people with Canadian endangered species. Second, to help young people not only be aware, but to become active in saving these species. The program is designed for grades four to eight and has been developed to fit into the existing curriculum. When classrooms become involved they will receive an Activity Book with lesson ideas and up-to-date scientific information, a teachers guide, a regular newsletter, posters and decals for the class. The cost is nominal and provides the instructor with the basic kit ($20.00). This program is something that F.A.N. might consider sponsoring for a trial number of schools to see how they respond. This would not only bring more environmental edcucation into the science program but would also provide more awareness of Canada's endangered species.

Phenology Survey of Alberta

Do you enjoy springtime walks? Do flowers attract you? Would you like to contribute to Canada's wildlife centennial celebration? Express your appreciation for nature's beauty and show your interest in preserving Alberta's wild heritage by joining a province-wide phenology survey. Your help in collecting information on when 15 native plants come into flower would be greatly appreciated.

This survey is a continuation of Dr. Charles Bird's F.A.N. phenology project of 1973-1983. More years of data are needed to reveal long-term averages in the timing of spring and summer in Alberta. This information has many uses, including producing maps of the "green wave of spring" across the province and providing go-ahead dates for some gardening and agricultural activities. The fields of forestry, meteorology, entomology, remote sensing and even human health (pollen warning information for hay-fever sufferers) will also benefit from this phenological data.

Check the list of species at the end of this article for those that occur near you. The information needed for each species is the date when 10% and 50% of those plants come into bloom. Because full bloom (when 100% of the plants are flowering) can extend over a long time period, this date provides less accurate information for mapping. Preferably, your natural area should be visited frequently from April to June to catch these plants as they come into flower. Choose plants on relatively flat ground for your observations, if possible. Those on a north-facing, cool slope will flower later and those on a south-facing warm slope will flower earlier, than those on level ground.

Flowering, for our purpose, is when petals and/or sepals are open. Shedding of pollen is a useful indicator, especially in aspen poplar where flowers have no colourful petals.

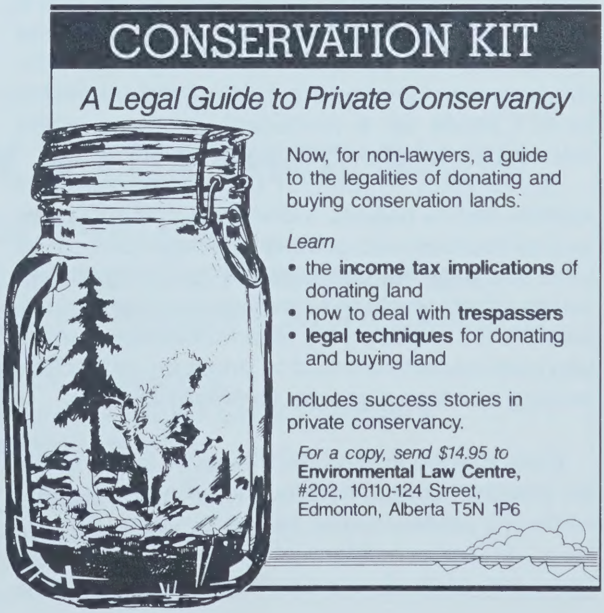
This survey will be of interest to teachers and students across Alberta.

For data sheets, and pictures of what these plants look like in flower, please write: *Phenology Survey, Botany Department, University of Alberta, Edmonton, Alberta, T6G 2E9.*

Or call: Ms. Elisabeth Beaubien. Work: 432-5520. Home: 438-1462. Or Dr. Walter Moser. Work: 432-4615. Home: 662-2718.

Phenology Species

Prairie Crocus	- *Anemone patens*
Aspen Poplar	- *Populus tremuloides*
Early Blue Violet	- *Viola adunca*
Golden Bean	- *Thermopsis rhombifolia*
Saskatoon	- *Amelanchier alnifolia*
Star-flowered Solomon's-seal	- *Smilacina stellata*
Choke Cherry	- *Prunus virginiana*
Yellow Pea Vine	- *Lathyrus ochroleucus*
Northern Bedstraw	- *Galium boreale*
Common Yarrow	- *Achillea millefolium*
Western Wood Lily	- *Lilium philadelphicum*
Brown-eyed Susan	- *Gaillardia aristata*
Wolf Willow	- *Elaeagnus commutata*
Twinflower	- *Linnaea borealis*
Fireweed	- *Epilobium angustifolium*



CONSERVATION KIT

A Legal Guide to Private Conservancy

Now, for non-lawyers, a guide to the legalities of donating and buying conservation lands.

Learn

- the **income tax implications** of donating land
- how to deal with **trespassers**
- **legal techniques** for donating and buying land

Includes success stories in private conservancy.

For a copy, send $14.95 to
Environmental Law Centre,
#202, 10110-124 Street,
Edmonton, Alberta T5N 1P6

WILDLIFE
19 Gaining Momentum / Un nouvel essor 87
FAUNE

Canadians have the unique opportunity to celebrate the 100th anniversary of the first wildlife sanctuary in North America. The Federal Minister of the Environment has proclaimed a national year of wildlife conservation, Wildlife 87: Gaining Momentum, to celebrate the establishment of the Last Mountain Lake Sanctuary in Saskatchewan.

In 1887 the Canadian government was urged to protect a specific area in the then North West Territories. It was feared that further development of the Long Lake Railroad would extend to islands and shorelines on the lake used by a richly varied population of nesting and migratory birds. To prevent the loss of wildlife habitat the Canadian government set aside the north end of the lake for a sanctuary. This was an unprecedented move, the boldness of which is perhaps more greatly appreciated today than in 1887. The foresight of that act can be appreciated particularly as the site is gaining in importance and has been singled out for international acclaim. In reserving an area for the purpose of protecting nesting and migrating birds Canada set a precedent for more active wildlife conservation in the 20th century.

The focus of Wildlife '87 is on conservation of wildlife and its habitat. Individuals and groups as well as business and government agencies are invited and urged to participate in ongoing conservation efforts and in the creation of new programs. Wildlife '87 is also a year to acknowledge current and past endeavours and to promote interaction among interested groups and individuals.

Participation in Wildlife '87 can be accomplished through various means, including the setting aside of a garden corner, hedgerow, pond, marsh, lake, 160 acres, or block of land for wildlife; planting a tree or shrub, or retaining a woodlot that provides food and shelter for wildlife; taking part in local events and creating conservation programs in local areas; making tax deductible donations of funds and/or land to local, provincial or national conservation groups, and/or the National Steering Committee; and contributing written material to local media about Wildlife '87 projects.

The concern that prompted the establishing of Last Mountain Lake Sanctuary in 1887 remains and carries an even more urgent message for today. The importance of such sanctuaries and other areas of conservation is increased as intensified use of land and resources reduces the quality and quantity of habitat available to wildlife. Will there be cause for another celebration one hundred years from today? That is up to us.

Call for Assistance - Prairie-Northwest Territories Shorebird Survey Program

In 1987, the Canadian Wildlife Service, Western and Northern Region will be initiating a program to survey major shorebird staging and nesting areas in the prairie provinces and the Northwest Territories. This project is part of the International Shorebird Surveys Program.

Similar surveys in Atlantic Canada have identified a number of significant staging areas in the Bay of Fundy. Many of these sites are not proposed for protection through the Ramsar Convention and the shorebird "Sister Reserves Program" (a hemisphere-wide system of reserves for shorebird protection). However, very little data exists on shorebird use in the prairie provinces or the Northwest Territories.

To accomplish its objectives for this program the Canadian Wildlife Service will have to rely heavily on the efforts of individuals, organizations and government agencies. Through your participation in this project, determination of potential Sister Reserves in these regions of Canada will be possible. If you are interested in surveying shorebird staging and/or nesting habitats in the prairie provinces or the Northwest Territories, please contact me at the address or phone number listed below. Everyone who takes part in the program will receive the annual summary of the Canadian survey results (provincial breakdowns are included).

H. Loney Dickson, Wildlife Biologist.
Canadian Wildlife Service, Western and Northern Region, 2nd floor, 4999-98 Ave., Edmonton, Alberta T6B 2X3.
Telephone: (403) 420-2525.

Nose Hill Park in Danger

Nose Hill Park is now in jeopardy and every effort must be made to preserve this unique remnant of our natural heritage. After some 25 years of speculation about a natural prairie park on Nose Hill, the citizens of Calgary will finally come face to face with a decision which will determine the fate of Nose Hill Park forever. Open space is one of Calgary's most attractive features; a way must be found now to complete Nose Hill Park and save this distinctive City landmark.

The Crisis: Recently introduced provincial legislation, tabled until the Spring session, would force the City either to expropriate the private land (at unpredictable prices) or to rezone it within six months. The Province has told the City to make a decision - therefore the City must be convinced that the creation of Nose Hill Park is supported by most Calgarians and must reaffirm its committment to the Nose Hill Park Master Plan adopted in 1980. The City currently owns 1500 of the 2700 acres proposed for Nose Hill Park. Remaining landowners, which hold most of the southern and western escarpments, have been either unable or unwilling to successfully negotiate land sales to the City.

Park Size: We are opposed to any compromise in the size of the Nose Hill Park. A prairie park must be large to retain the open space and big sky feeling associated with the plains. The intrusion of residential development onto the hill would destroy both the visual integrity and the essence of this distinctive landmark. If the prices for the remaining land are consistent with recent purchases in Nose Hill Park, then the cost to complete the Park should be well within the capability of the City's current financial resources.

Your Help: The Nose Hill Park Communities Board is urging all Park supporters to help in this struggle to preserve Nose Hill. We must convince both levels of government that this issue is a very real concern to Calgary residents. Phone your alderman (268-2430), the Mayor (268-5622) and your MLA (297-6161). Write letters to all concerned. Organization is required to address the issues, facilitate solutions and establish a widespread network which can be mobilized to speak up to save Nose Hill Park. If you can make a contribution of time and effort or merely wish to indicate your support by joining the network, please call John Peirce (284-1582), Ed Wahl (282-7071) or Wayne Eirich (274-2060) or write to N.H.P.C.B., 408 Huntley Way NE, Calgary, T2K 4Z8.

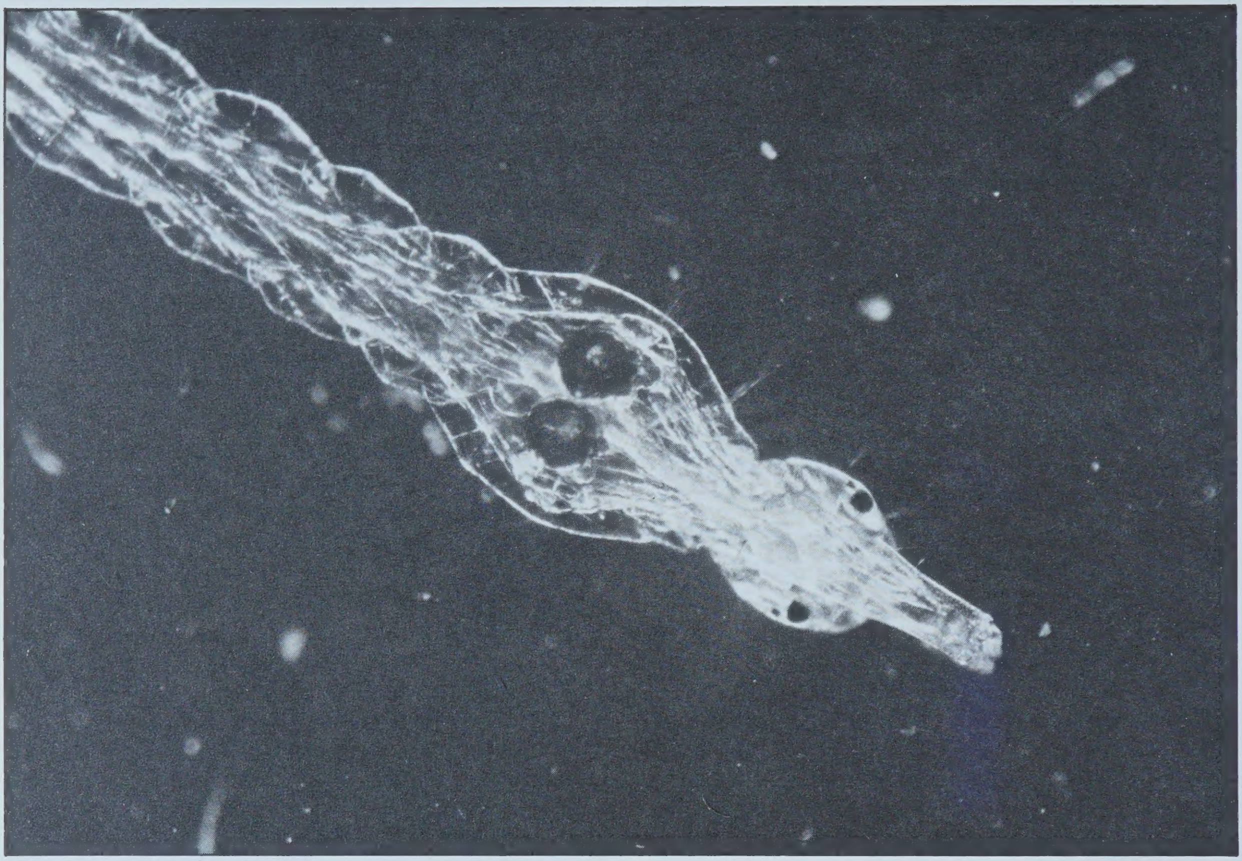
DOUBLE L SADDLERY & LEATHER SHOP

SALES • SERVICE • RENTALS

ON SPECIALIZED OUTDOOR AND CAMPING EQUIPMENT FOR THE
X-COUNTRY SKIER • HIKER • BACKPACKER • HORSEPACKER • CANOEIST

Repairs on all kinds of equipment
10% discount on new equipment to Naturalist Club Members
All products personally tested

LLOYD M. LOHR
Box 1414, Stettler, Alberta T0C 2L0
Phone (403) 742-3846



Phantom Midges *are widely distributed and common in lakes, ponds, and sloughs. Their transparency makes them very difficult to see, hence the name. The most visible parts, the hydrostatic organs (one behind the head and the other in the seventh segment) look like small bubbles and reveal the presence of the animal. It is a small predator, 10 to 12 mm long, and feeds on crustaceans and insect larvae. It captures them with prehensile antennae, shown here folded up between the eyes. Most of its time is spent motionless and horizontal in the water. The adult looks much like a mosquito, but does not bite. (Photo and caption by Tom Branch.)*

F.A.N. Membership Fees Are: Regular $15 per year; Supporting, $25 or more per year (with excess over $15 being deductible from your taxable income):

ENCLOSED IS $_______ COVERING A _______ YEAR REGULAR MEMBERSHIP

ENCLOSED IS $_______ COVERING A _______ YEAR SUPPORTING MEMBERSHIP

NAME ____

ADDRESS ______________________________________

____________________ POSTAL CODE ____________________

SEND TO:
FEDERATION OF ALBERTA NATURALISTS
Box 1472, Edmonton, Alberta T5J 2N5

Recent Publications on Alberta Natural History

Compiled by David M. Ealey and Martin K. McNicholl

Naturalists

Cody, W.J. and J. Cayouette. 1986. A tribute to Bernard Boivin, 1916-1985. Can. Field-Nat. 100:280-288.

Dodge, D.G. 1986. Wildlife lives. Park News 22(3):34-36 - Ludo Bogaert.

Hallworth, B. 1986. History and background of our popular guide, "Calgary's Natural Areas," 1975. Pica 6(4):7-9.

Tokaryk, T.T. 1986. H.S. "Corky" Jones: a biographical note. Blue Jay 44:145-149.

Wiseley, A.N. 1986. Orval Pall, wildlife biologist, 1951-1986. Pica 6(4):22-23.

Geology

DeLugt, J. 1986. Side valley evolution and the role of piping erosion. Albertan Geographer, No. 22:3-26.

Water

Irvine, K.N. and P.R. Waylen. 1986. Partial series analysis of high flows in Canadian rivers. Can. Water Resources J. 11(2):83-91.

Tate, D.M. 1986. Canadian water use trends, 1981-2011. Can. Water Resources J. 11(3):1-10.

Paleontology

Russell, L. 1986. Exploring a great dinosaur graveyard. Rotunda 19(2):20-29.

Tokaryk, T.T. 1986. Collection of fossil vertebrates for the Saskatchewan Museum of Natural History, 1985. Blue Jay 44:150-152.

Non-vascular Plants

Mallett, K.I. and Y. Hiratsuka. 1986. Nature of the "black line" produced between different biological species of the *Armillaria mellea* complex. Can. J. Botany 64(11):2588-2590.

Vascular Plants

Coxson, D.S. and J.H.H. Looney. 1986. Vegetation patterns within southern Alberta coulees. Can. J. Botany 64(11):2464-2475.

Nelson, S.D., L.C. Bliss, and J.M. Mayo. 1986. Nitrogen fixation in relation to *Hudsonia tomentosa:* a pioneer species in sand dunes, northeastern Alberta. Can. J. Botany 64(11):2495-2501.

Trees

de Wit, L. 1986. The hangin' trees. Pica 6(4):41-43.

Dodge, D.G. 1986. This is road treeing. Park News 22(3):12-14.

Invertebrates

Conrad, K. 1986. An introduction to dragon fly watching. Pica 6(4):15-22.

Darling, D.C. 1986. Revision of the New World Chrysolampinae (Hymenoptera: Chalcidoidea). Can. Entomologist 118(9):913-940.

Lafontaine, J.D. and V.S. Kononenko. 1986. A revision of the genus *Trichosilia* Hampson (Lepidoptera: Noctuidae) with descriptions of four new species. Can. Entomologist 118(11):1079-1113.

Schaber, B.D. 1986. Not all grasshoppers eat grass and cereals. Pica 6(4):4-6.

Fish

McKeen, S. 1986. Of bleeding heart conservationists and killing fish. Park News 22(3):6-9.

Birds

Albert, M.G. 1986. Yellow-bellied Sapsucker. Edmonton Nat. 14(3):12-13.

Archibald, G. and C. Mirande. 1985. Population status and management efforts for endangered cranes. Trans. North Amer. Wildl. & Nat. Resources Conf. 50:586-602.

Bemmels, B. and M. Bemmels. 1986. Further observations of albino Black-billed Magpies. Edmonton Nat. 14(3):9.

Bennett, G. 1986. Great Canadian round-up - fall brand. Birdfinding in Canada 6(6):16-21, 24.

Bennett, G. 1986. Great Canadian round-up- - spring brand. Birdfinding in Canada 6(4):10-17.

Bennett, G. 1986. Here and there across the west. Birdfinding in Canada 6(6):5-7.

Boyd, H. and F.G. Cooch. 1986. Recent changes in sales of migratory game bird hunting permits and prospects for the near future. Can. Wildl. Serv. Progress Notes No. 162. 15pp.

Cannings, R.J. 1986. Western and northern Canada. Amer. Birds 40:600-602. -summary of Christmas bird counts, with the following from Alberta: 131. Banff-Canmore (compiled by M. McIvor) p. 635:132. Bow Summit (M. McIvor) 635; 133. Calgary (I. Halladay):635; 134. Edmonton (J. Lange):635; 135. Elk Island N.P. (G. Holroyd):635-636; 136. Erskine (L. Lohr):636; 137. Fort McMurray (J. Gulley):636; 138. Horseshoe Canyon (R. Storms):636; 139. Kananaskis Valley (R. Zammuto):636; 140. Medicine Hat (R. Gardner):636; 141. Stettler (L. Lohr): 636-637; 142. The Snake's Head (D. Collister):637; 143. Wabamun Lake (C. MacDonald):637; 144. Wildlife Reserve of Western Canada (J.Podlubny):637.

Chapman, B.-A. 1986. Addenda to recent papers in the Canadian Field-Naturalist. Can. Field-Nat. 100:277. -addendum to paper on Black-necked Stilts in western Canada.

Collister, D. 1986. Spring 1985 - highlights. Alberta Bird Record 4(3):67-89.

Cowan, W.F. 1985. Ducks Unlimited's agricultural extension program. Trans. North Amer. Wildl. & Nat. Resources Conf. 50:169-175.

Dodge, D.G. 1986. Love of beaches is trouble. Park News 22(3):20-21. -Piping Plover.

Ebel, R. 1986. Highlights from the Beaverhill Bird Observatory Annual Report 1984. Edmonton Naturalist 14(4):6-14.

Gainer, B. 1986. Bluebirds in the Fort Vermilion area. Alberta Bird Record 4(3):66.

Goater, C.P. and A.O. Bush. 1986. Nesting birds as prey of breeding Long-billed Curlews, *Numenius americanus.* Can. Field-Naturalist 100(1):263-264.

Gollop, J.B. 1986. The spring migration March 1-May 31, 1986. Prairie provinces region. Amer. Birds 40:487-488.

Gollop, J.B., T.W. Barry, and E.H. Iversen. 1986. Eskimo Curlew / a vanishing species. Sask. Nat. Hist. Soc. Spec. Publ. No. 17. 160 pp.

Gulyas, Z. 1986. Bird box "body language." Pica 6(4):37-38.

Hochachka, W.M. 1986. Variation in size specific composition of Black-billed Magpie eggs within and among clutches. Condor 88(4):522-524.

Hohn, E.O. 1986. Roosting habits of an urban Merlin. Blue Jay 44:194-196.

Holroyd, G. 1986. Alberta bird banders - 1985. Edmonton Nat. 14(3):15.

Jehl. J.R., Jr. and P.M. Yochem. 1986. Movements of Eared Grebes indicated by banding recoveries. J. Field Ornithol. 57:208-212.

Johns, B.W. 1986. 1986 Whooping Crane migration - prairie provinces. Blue Jay 44:174-176.

Jones, E.T. 1986. The passerine decline. North Amer. Bird Bander 11:74-75.

Lyon, A. and G. Lyon. 1986. Strong parental instinct in crows. Pica6(4):39-40.

McFaul, J. 1986. May species count. Pica 6(4):26-30.

Myres, M.T. 1986. Comments on the impoverished avifauna of an inner city garden, or what have we done to our insects? Pica 6(4):10-14.

Pearman, M.D. 1986. Project nest box Alberta and environmental education. Sialia 8:147-150.

Reebs. S.G. 1986. Influence of temperature and other factors on the daily roosting habits of Black-billed Magpies. Can. J. Zool. 64:1614-1619.

Reebs, S.G. 1986. Sleeping behavior of Black-billed Magpies under a wide range of temperatures. Condor 88(4):524-526.

Robbins, C.S., D. Bystrak, and P.H. Geissler. 1986. The breeding bird survey: its first fifteen years, 1965-1979. U.S. Dept. Inter., Fish and Wildl. Serv. Resource Publ. 157. iii + 196 pp.

Ryff, A.J. 1986. The spring mystery of Sabine's Gull. Birding 18:83-90.

Salter, R.E., J.A. Smith, W.R. Koski, and J.M. Barbeau. Mongolian Plover, *Charadrius mongolus,* in Alberta. Can. Field-Naturalist 100(2):257-258.

Schmutz, J. 1986. Canada, west. Eyas 9(2):21.

Shantz, B.R. 1986. A history of the Ellis Bird Farm. Sialia 8:143-146.

Steeves, J. and M. Steeves. 1986. Exceptional vocalization of Boreal Chickadee. Alberta Bird Record 4(3):64-65.

Williams, R.K. 1986. Further observations of albino Black-billed Magpies. Edmonton Nat. 14(3):9.

Mammals

Dekker, D. 1986. Coyote, *Canis latrans,* preys on two bighorn lambs, *Ovis canadensis,* in Jasper National Park, Alberta. Can. Field-Naturalist 100(1):272-273.

Dodge, D.G. 1986. Grizzlies...the untold story. Park News 22(3):24-29.

Hornbeck, G.E. and B.L. Horejsi. 1986. Grizzly Bear, *Ursus arctos,* usurps wolf, *Canis lupus*, kill. Can. Field-Naturalist 100(2):259-260.

Struzik, E. 1986. Fighting the odds. Nature Canada 15(4):24, 55. - Wood Bison.

Development/Environmental Problems

Anonymous. 1986. Sour on gas. Park News 22(3):30-32.

Dodge, D.G. 1986. Wilderness worth paying for? Commentary. Park News 22(3):2-3.

Hamilton, I. 1986. A land ethic in the making. Park News 22(3):10-11.

L'Hirondelle, S.J., P.A. Addison, and D.B. Huebert. 1986. Growth and physiological responses of aspen and jack pine to intermittent SO_2 fumigation episodes. Can. J. Botany 64(11):2421-2427.

Tingley, D. 1986. Environmental rights change in the wind? Park News 22(3):4-5.

Parks and Natural Areas

Carbyn, L.N. 1986. Visitors to Clifford E. Lee Nature Sanctuary. Edmonton Nat. 14(3):14-15.

Osborne, C. 1986. Nose Hill. Pica 6(4):24-25.

Shaw, K. 1986. The Sea Hawk: World War II in Waterton Park. Park News 22(2):13-16.

Struzik, E. 1986. Sacred trusts. Have we compromised our National Parks? Nature Canada 15(4):24-30.

Van Tighem, K. 1986. Have our national parks failed us? Park News 22(2):31-33.

JUL 31 1987

ALBERTA NATURALIST

Volume 17, Number 2, Summer 1987.

For Reference
MROSE LUTHERAN COLLEGE
LIBRARY
ot to be taken from the Library

Blue-winged Teal (Photo: Tom Branch).

ALBERTA NATURALIST

Volume 17, Number 2, July 1987.

Published quarterly by the Federation of Alberta Naturalists
Box 1472, Edmonton, Alberta T5J 2N5

CONTENTS

Occurrence, Distribution and Plumages of Gyrfalcons in the Calgary Area.
Allen N. Wiseley and Harold Pinel 37

Black Swift Nests at Maligne Canyon, Jasper National Park.
Geoffrey L. Holroyd and W. Michael Holroyd 46

Dragonflies of the Devonian Botanic Garden.
Godo Stoyke 49

Kerry Wood: Recipient of the 12th Loran L. Goulden Memorial Award.
Sandy Murray 55

The Sundown Squirrels.
Kerry Wood 57

Naturalists' Bookshelf.
A Legacy of Laughter.
D.M. Fabijan 59

Winter Here and Now.
Liz Stinson 59

F.A.N. News, Club News, Announcements, Notes and News ...61

Recent Publications on Alberta Natural History 70

The Alberta Naturalist is published quarterly by the Federation of Alberta Naturalists. Special issues may be published from time to time. Any material printed for the first time in the AN may be reproduced without permission; credit lines will be appreciated. All opinions expressed are those of the authors concerned and, except where stated, do not represent official F.A.N. policy.

ADVICE TO CONTRIBUTORS

Items for publication should be addressed to the Editor at the address below. Deadlines for submission of material for regular issues are: January 1, April 1, July 1, and October 1. All material submitted for publication must be typed, double-spaced, preferably on 8½"x11" paper. Maps, charts, and graphs should be submitted in "camera-ready" form if possible. Photographs accompanying an article should be submitted in the form of black and white prints on glossy paper. (Prints can be made from supplied colour slides or negatives if necessary.) Illustrative material will be returned on request. The author's name and a complete mailing address must be provided with the submission of material. Contributors should be aware that articles of a technical nature and those involving the sightings of rare species, range extensions, out of season records, etc. may be sent out for peer review. A complimentary copy of the issue in which a submission appears will be sent to authors. Information on advertising rates may be obtained from the Editor at the FAN Box No.

DEADLINES for FAN project reports are: *Alberta Christmas Bird Counts,* January 30, Andrew Slater, 152 Oakside Circle S.W., Calgary, AB. T2V 4H2; *May Species Count - Plants, Birds and Mammals,* July 15, J. Derek Johnson, Northern Forestry Centre, 5320 - 122 St., Edmonton, AB. T6H 3S5; Compiler cooperation is greatly appreciated.

Editor: Derek Johnson,
7109 - 106 St., Edmonton, Alberta T6E 4V5.
Telephones: 436-8231 home, 435-7306 work.
Assistant Editors: Dick Dekker, David M. Ealey
Graphic Design and assembly: Dick Dekker
Printing: Europe Offset Ltd.

ISSN 0318-5440. Postage paid at Edmonton, Alberta under Second Class Mail Registration No. 3604.

Occurrence, Distribution and Plumages of Gyrfalcons in the Calgary Region

Allen N. Wiseley and Harold Pinel

The Gyrfalcon is an arctic bird species with a circumpolar nesting distribution. The great majority of its nesting range is north of 60. N (Godfrey 1986). Local populations have nested south to 57. N in western Alaska and Quebec (Platt 1976). In Alberta, Gyrfalcons are mainly seen "in late fall and winter when young birds wander widely before returning in spring" (Salt and Salt 1976).

Little information is available on the regional status of the Gyrfalcon in Alberta, especially outside of the Edmonton and Calgary areas. Dekker (1983) lists nine sightings for Beaverhill Lake and three for Edmonton. His Beaverhill Lake records were the results of 679 days of birdwatching from September to December and during March and April over a 20-year period from 1964 to 1983. He believed that Gyrfalcons occurred more regularly in the Calgary area (Dekker 1977).

This article summarizes the data from 103 Gyrfalcon sightings in the Calgary region gathered during the years from 1961 through 1985. The Calgary region is defined as a circle with an 80 km radius from the city center. The data comes principally from the files of the Calgary Field Naturalists' Society, supplemented by the field notes of other observers. All sightings are listed in Table 1. The authors realize that there may be potential misidentifications among the sightings, however no effort was made to edit the records.

Occurrence

Gyrfalcons have been reported in the Calgary area from September 21 to May 14, over the 25 year period. Figure 1 illustrates by graph the number of sightings on a monthly basis. The two September records are interesting since most references report Gyrfalcons as late fall and winter visitors. Dekker (1983) also saw Gyrfalcons at Beaverhill Lake in September. At the other end of the spectrum, there are three unusually late records during May. One of the May birds had hit a power line near Langdon, so identification was done in the hand. The latest record for Beaverhill Lake reported by Dekker was April 14.

Most observations of Gyrfalcons in the Calgary area were made from November through March, with a peak of 27 birds observed in January. The annual number of Gyrfalcon reports has varied from zero in 1962, 1963, 1964, 1972 and 1976 to a high of 14 in 1984. From 1981 through 1985, the average number of sightings reported annually was 11.6.

Distribution

The 103 Gyrfalcon sightings for the Calgary region are mapped in Figures 2 and 3. Figure 2 represents the rural sightings while Figure 3 depicts the urban sightings. Thirty-three per cent (34 sightings) were made within the Calgary city limits, and 67 percent (69 sightings) were made in rural areas.

Figures 2 and 3 show the distribution of Gyrfalcon sightings to be widespread throughout the Calgary region with a few areas of concentration. These include the Black Diamond, Springbank, Shepard and Water Valley areas on the rural map (Figure 2) and the Inglewood Bird Sanctuary and Carburn Park areas on the urban map (Figure 3). Although the distribution of birds throughout the years has been fairly widespread, the numbers of sightings are higher in areas closer to the city and in areas popular with birdwatchers.

To whatever extent the mapped distribution of birds in the Calgary region is biased by observer patterns, the reports are still real data. The concentrations of sightings are locations where regular concentrations of prey species of Gyrfalcons often occur. These spots attract both the falcons and birdwatchers.

The mapped pattern of sighting distribution for Gyrfalcons is consistent with the concept of the bird as an opportunistic predator that wanders widely during the winter months. Even though concentrations of sightings appear on the Figures, few of these are repeat sightings of the same bird over a period of time. Most are single sightings. If, as Platt (1976) states, southern wintering Gyrfalcons are primarily immature birds, then widespread travel patterns are plausible.

Among the accumulated sightings and a few collected anecdotes from Alberta naturalists are a few indications that some Gyrfalcons do not necessarily wander. D. Broadbent (pers. comm.) recalls a Gyrfalcon that spent much of a month in 1982 near a railroad crossing near Penhold southwest of Red Deer. J. Campbell Jr. observed a bird that spent nearly three months (December 1981 to March 1982) frequenting an area northwest of Black Diamond, where Mallards were feeding regularly in a grain field (see Table 1). P. Dielman (pers. comm.) recalled a "mostly white" Gyrfalcon that was seen two to three times per winter over a period of at least two years in the mid to late 1970's on fenceposts near his family's farm near Morinville, northwest of Edmonton.

A dependable food supply may be the essential factor determining the winter residency of the Gyrfalcon. The abundant food supply of eastern Calgary along the Bow River, principally large numbers of Mallards (14,000 on the 1985 Cal-

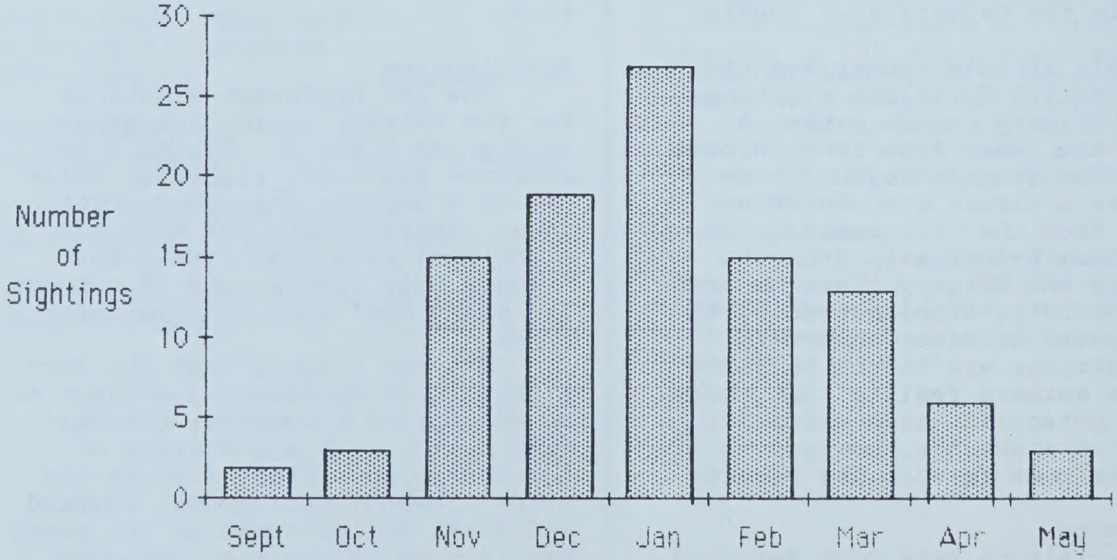
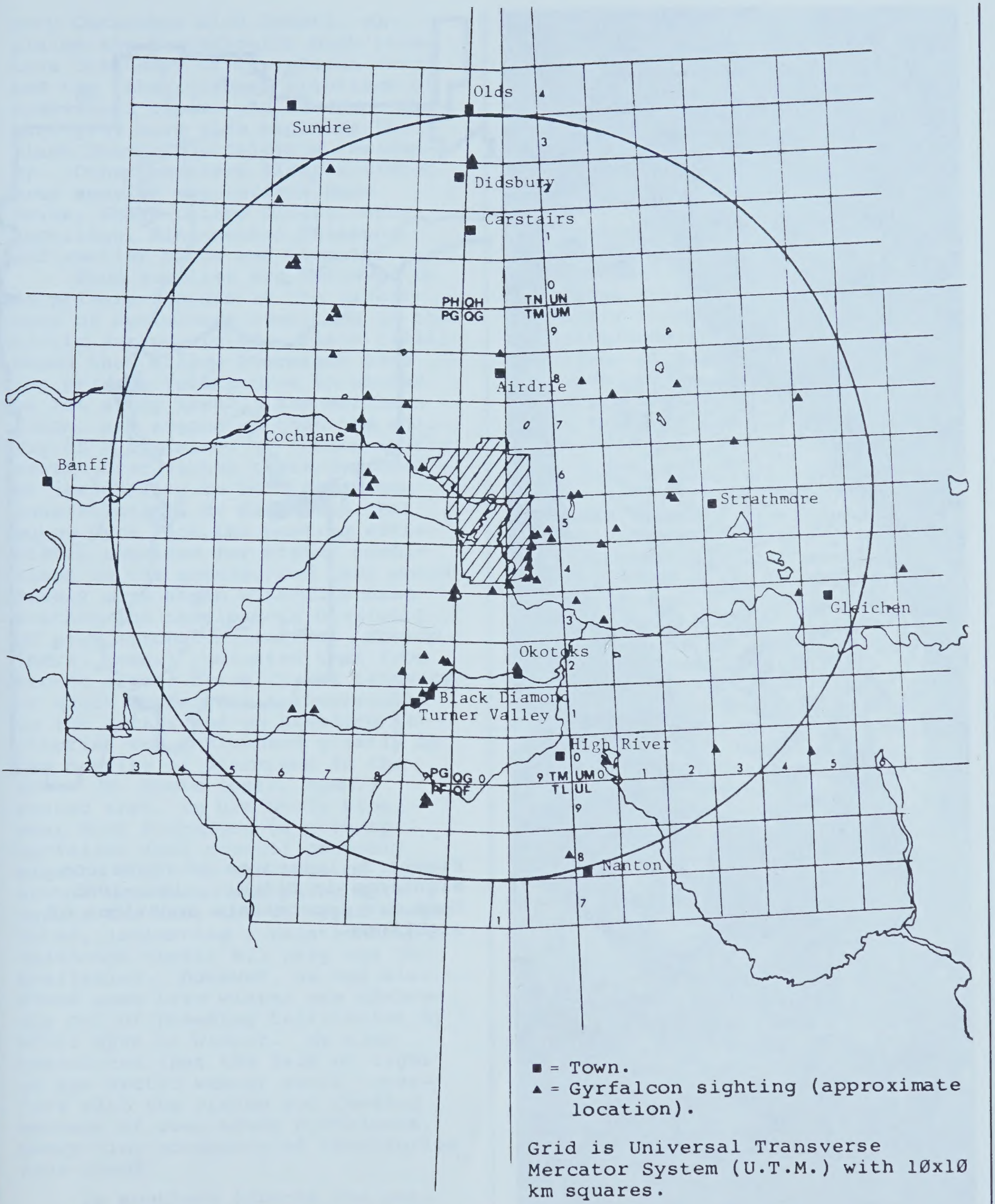


Figure 1: Gyrfalcon sightings by month.


Olds
Sundre
Didsbury
Carstairs
PH QH
PG QG
TN UN
TM UM
Airdrie
Cochrane
Banff
Strathmore
Gleichen
Okotoks
Black Diamond
Turner Valley
High River
PG QG
PF QF
TM UM
TL UL
Nanton
2 3 5 6 7 8 0 9 0 1 2 3 4 5 6
3 2 1 0 9 8 7 6 5 4 3 2 1 0 9 8 7 1

■ = Town.
▲ = Gyrfalcon sighting (approximate location).

Grid is Universal Transverse Mercator System (U.T.M.) with 10x10 km squares.

Figure 2: Calgary region Gyrfalcon sightings 1961-1985.

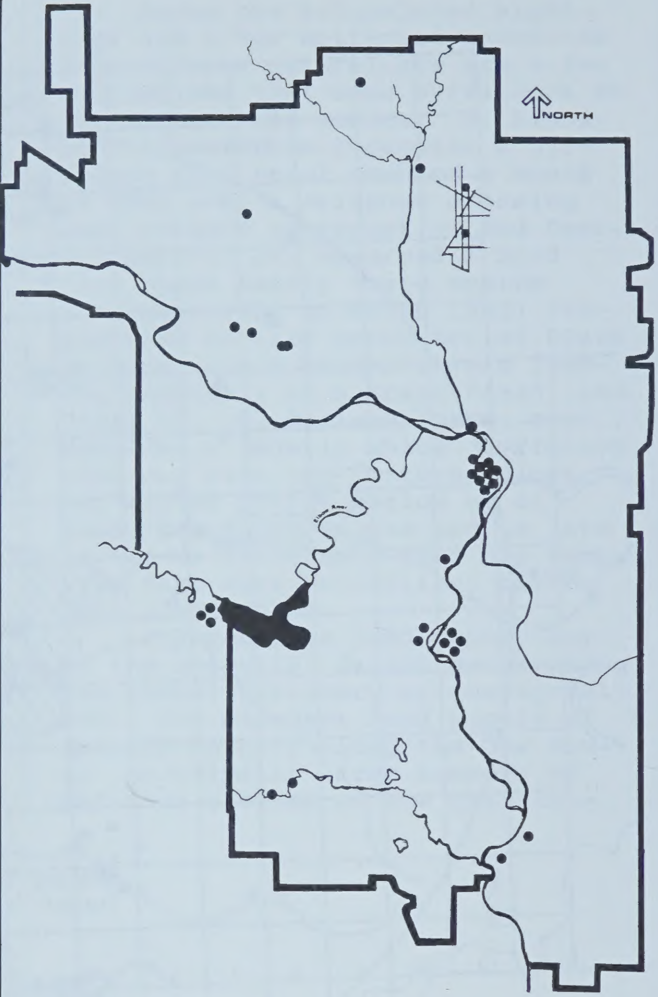
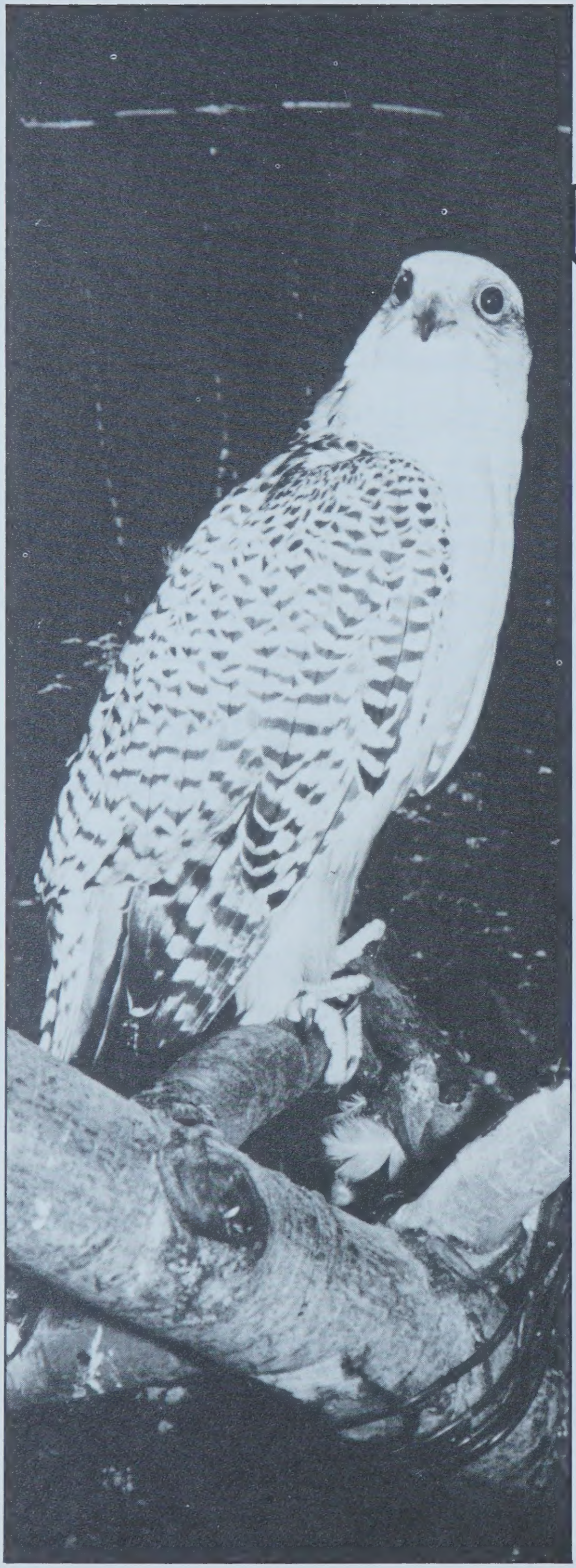


Figure 3. Locations of Gyrfalcon sightings in Calgary, 1961-1985. Dots are approximate locations of sightings.



White Gyrfalcon at Wainwright breeding station. (Photo: Edgar T. Jones).

gary Christmas Bird Count), explains the historically high relative frequency of Gyrfalcons there and the likely repeat sightings of individual birds. An abundant Mallard prey base also explains the Black Diamond Gyrfalcon's residency. Other southern Alberta winter prey species may include Rock Doves, Sharp-tailed Grouse, Gray Partridge, Ring-necked Pheasant, and smaller birds and mammals.

Food supplies are believed to be primary factors in the likelihood of Gyrfalcons remaining in the arctic during winter. Platt (1976) found that Willow Ptarmigan were the primary food source in winter on his study area in the northern Yukon, and suggested that the ability of a Gyrfalcon to remain in the arctic over winter there depended on its ability to take ptarmigan consistently. He also felt that young Gyrs lack the hunting efficiency required for winter conditions in the arctic, and they would likely move south with worsening weather and the loss in diversity of prey through migration. Mossop (pers. comm.) indicated that from recent arctic research the tendency of adult Gyrfalcons to overwinter in the arctic and on breeding territories was influenced greatly by the density of ptarmigan in the area. K. Poole (pers. comm.) stated that, in his study area, most Rock Ptarmigan (a principal Gyrfalcon food source) probably migrate south to the edge of the arctic treeline, and young Gyrs vacate the area two to eight weeks later, indicating a relationship (although nearly all prey was unavailable). However, he had also found some late winter use (February on) of breeding territories by adult Gyrs in winter. He also postulated that the lack of light in the arctic winter would interfere with the vision and feeding success of even adult Gyrfalcons, preventing occupancy of territories year-round.

In southern Alberta the patterns emerging from winter Gyrfalcon records suggest that the birds are seen most consistently where easily-obtainable or concentrated prey exist in winter. Only rarely do they seem to frequent a spot for an entire winter. Occasionally they are seen where large amounts of natural upland habitat are found, but usually the bird only remains a short time. We would suggest that in this case the bird may be travelling widely in the surrounding area, within which its appearance at any one point may be quite unpredictable and repeat sightings highly unlikely. In intensively farmed areas, sightings of Gyrfalcons are generally single sightings of birds moving through the area or, if stopping, there is usually a temporary attraction (e.g. a pigeon flock resident at a farmstead).

That a particular Gyrfalcon may be seen in subsequent years (Dielman example, previously mentioned) suggests the possibility that successfully used areas may be reoccupied annually by the same birds. Maturity may take four years in this species (Platt 1976), after which it is likely to remain in or near the arctic. Until that age, if it is successful in an area for one winter, then the value of returning to that familiar area has survival value. At maturity it is possibly an advantage to reside in or near the breeding territory, an explanation put forward by Gyrfalcon researchers. Males, in particular, seem to be maintaining a presence during the winter, when prey densities, i.e. ptarmigan, on their territories are high (per D. Mossop). That some adults come south in winter indicates that some arctic areas are not as dense in prey as the Gyrfalcons require for survival in that winter (per D. Mossop), or the ptarmigan have vacated the area have largely vacated (per K. Poole). It is not known if some adults might return to favorable southern wintering spots.

Plumages

The plumage of the Gyrfalcon is variable from pale phase, mainly white birds, to dark phase birds which are mainly leaden blackish brown. Many intermediate grey phases are common. In an analysis of Table 1, the predominant color phase in the Calgary area is the grey phase (56%), followed by the dark phase (20%), and then the white phase (13%). Eleven percent of the observations did not indicate a color phase.

Estimates of the frequency of white phase birds go from nil or very low in northern Alaskan populations (Cade 1960), to less than 5% in Yukon populations, while in the central arctic, white proportions reach almost 50% (Poole and Bromley 1985).

The likely origin of the Gyrfalcons that visit Alberta is believed to be the western arctic, possibly following the migratory pathways that many waterfowl, shorebirds, and other birds follow. This is supported by two recent band returns from Alberta of young Gyrfalcons from the Yukon, both grey phase birds (pers. comm. D. Mossop). Although he had witnessed many young birds moving from the western arctic to the west coast during the fall, he felt that many others would go toward Alberta and the other prairie provinces.

It is apparent that the proportions of white birds in the Calgary sightings does not mirror the proportions in the western arctic populations. Two explanations are likely. One is that populations well east of the Mackenzie River are contributing to the numbers of Calgary area wintering Gyrfalcons. Another possibility is that the proportions are skewed toward white birds because of the probable observational bias toward white phase birds. That is, more white Gyrfalcons are reported because they are easier to identify and have a high status among naturalists. People who have seen such birds may have been urged to report them by people who oversee or contribute regularly to the record collection.

The degree to which each explanation accounts for the larger white proportion in the records is difficult to gauge, but it is likely both have had some effect. For example, a few of the names of people reporting white phase Gyrfalcons are people who did not ordinarily submit many other records. On the other hand, one cannot ignore maps of Canada that show the central arctic not far from a direct line north from Alberta. Although there is no evidence to support the movement of Gyrfalcons directly south, and the only band records of dispersers from the central arctic show an eastern movement (pers. comm. K. G. Poole), some movement directly south is likely to occur if only by chance. Perhaps the degree of the central arctic's contribution to Alberta's winter Gyrfalcon population will best be known if banded individuals are eventually discovered in Alberta. Banding of young Gyrfalcons has been conducted in both the Yukon and the central arctic. Readers are asked to be alert to the possibility of colored and standard bands that might be visible on wintering Gyrfalcons. Note any colored bands and the relative positions of bands on each leg.

Literature Cited

Cade, T.J. 1960. Ecology of the Peregrine and Gyrfalcon populations in Alaska. Univ. Calif. Publ. in Zool. 63:151-290.

Dekker, D. 1977. Field identification of peregrines, prairie falcons and gyrs in south and central Alberta. Alta. Nat. 7(1):1-5.

Dekker, D. 1983. Gyrfalcon sightings at Beaverhill Lake and Edmonton, Alberta 1964-1983. Alta. Nat. 13(3):103.

Godfrey, W.E. 1986. The Birds of Canada. Natl. Mus. Can., Ottawa, Ont. 595 pp.

Platt, J.B. 1976. Gyrfalcon nest site selection and winter activity in the western Canadian arctic. Can. Field-Nat. 90(3):338-345.

Poole, K.G. and R.G. Bromley. 1985. Aspects of the ecology of the Gyrfalcon in the central arctic, Northwest Territories, 1983 and 1984. File report #52, N.W.T. Wildlife Service, Yellowknife. 65 pp.

Salt, W.R. and J.R. Salt. 1976. The Birds of Alberta. Hurtig Publ., Edmonton. 498 pp.

Authors' Addresses:

1. #202, 635 - 56 Ave. S.W. Calgary, Alberta T2V 0G9
2. 1017 - 19th Ave. N.W. Calgary, Alberta T2M 0Z8

Table 1. Gyrfalcon Sightings in the Calgary Region, 1961 - 1985.

Date	Location	Color Phase[1]	Observer(s)[2]
1961			
Jan. 8	Midnapore area	W	DD
Feb. 12	Hwy. 1A, W Calgary	G	DD
1965			
Mar. 6	Confed. Pk., Calgary	W	CW
Mar. 13	1.6 km from Fish Creek, Calgary	G	RK
1966			
Jan. 14	9.6 km W, 1.6 km N Strathmore	Lgt.	IS
Oct. 13	9.6 km N Black Diamond	G	JC Sr.
Oct. 16	Okotoks	G	NS
Dec. 18	32 km E High River	G	BM,WS
1967			
Nov. 5	Black Diamond	G	MH
Nov. 10	McElroy's Slough, Chestermere Lk.	-	DB,EB
Dec. 9	Bowness Pk., Calgary	-	WS
1968			
Jan. 21	Opp. side Bow R., Fish Creek	G	DD
Feb. 22	9.6 km W, 1.6 km N Strathmore	-	IS,TS
Mar. 13	Black Diamond	-	JC Sr.
Dec. 7	Springbank, W Calgary	G	WM,WS,CW
1969			
Jan. 25	Springbank	G	CW,MW
1970			
Feb. 18	12.8 km NW Strathmore	G	IS
Mar. 31	Weaselhead, Calgary	-	JPr
1971			
Feb. 5	9.6 km SSE, Namaka Lake	G	WS
1973			
Jan. 15	North part Calgary	W	NB,SO,EO
Jan. 23	Red Deer Lake School, S Calgary	G	WS,CW
Feb. 18	Beaverdam Flats, Calgary	W	HP,CR
1974			
Jan. 3	Inglewood Bird Sanctuary, Calgary	D	HP
Jan. 8	Inglewood Bird Sanctuary, Calgary	D	HP,CR
Jan. 21	16 km W Milo	G	EB
Mar. 3	32 km N Calgary	-	EJ
Mar. 25	9.6 km S Bottrel	D	HP,CR
1975			
Jan. 26	8-16 km S Westward Ho	W	LF,WF

1977			
Apr. 1	Frank Lake	W	GoW,GrW
Apr. 15	1.6 km E, Calgary, Glenmore Tr.	G	OD
Nov. 13	Weaselhead, Calgary	G	PSh
Dec. 3	Weaselhead, Calgary	G	BSh,PSh
1978			
Jan. 14	Fish Ck. Park, Calgary	G	PSh
Mar. 4	Confederation Park, Calgary	Lgt.	RB
Apr. 9	Bighill Springs Prov. Park	G	JS,MS
Apr. 23	4.8 km N Didsbury Jct., Hwy. 2	W	ASt,DSt,PSt
May. 14	Nose Cr. Valley, West Airport	W	JS,MS,DSt
Nov. 25	3.2 km N Kathyrn	-	CM
1979			
Mar. 10	Bottrel	G	JPo
Apr. 3	Carburn Park, Calgary	G	OD
1980			
Jan. 1	6.4 km N, 1.6 km E Shepard	G	AS
Nov. 21	3.2 km S, 800 m W Shepard	D	RL
Dec. 16	Douglasdale Estates, Calgary	D	HP
Dec. 21	Nose Hill, Calgary	G	RWo
Dec. 24	1.6 km E, 2.4 km N Shepard	-	RL
1981			
Jan. 3	Bottrel	G/D	SH,JS,MS,LSe, NSe
Jan. 24	Crowchild Tr. & Northmount, Calg.	W	MM
Mar. 25	Irricana Sloughs	G	JS
Apr. 24	Memorial & Deerfoot, Calgary	W	DEs
Nov. 17	10.5 km N, 4.8 km E Indus	D	RL
Dec. 11	2.8 km S, 1.6 km W Shepard	D	RL
Dec. 13	McElroy's Slough, Chestermere Lk.	G	JS
Dec. 13	Big Hills Springs Creek	G	PSh
Dec. 21	Inglewood Bird Sanctuary, Calgary	D	RB,WH
1982			
Jan. 3 or 4	4 km NNW Black Diamond	G	JC
Jan. 3	Water Valley	G	BB,JS,LSe,NSe
Jan. 13	Inglewood Bird Sanct., Calgary	D	DE
Jan. 28	8 km NE Black Diamond	G	JC Sr.
Feb. 14	8 km NE Black Diamond	G	JC Sr.
Mar. 15	5.2 km S, 400 m W Shepard	D	RL
May 9	3.2 km W Langdon	G	OD,JR
Nov. 4	Inglewood Bird Sanct., Calgary	Lgt.	DE
Nov. 17	Inglewood Bird Sanct., Calgary	D	DE
Dec. 19	Carburn Park, Calgary	G	IH et al.
Dec. 19	Inglewood Bird Sanct., Calgary	G	WH
1983			
Jan. 9	1.6 km W Bergen	D	KM,RS,WW
Jan. 23	5 km E Cochrane	G	PSh, AW
Jan. 30	4 km N Didsbury Jct., Hwy. 2	G	DSt, AW
Feb. 19	Calgary International Airport	G/D	JS
Feb. 20	Calgary International Airport	G/D	JS
May 8	Nightingale	G	OD,JR
Sept. 21	Inglewood Bird Sanct., Calgary	D	DE
Nov. 6	Red Deer Lake, S of Calgary	G	OD,DSm

Nov. 11	Cominco area, Calgary	D	ES et al.
Nov. 26	Fish Ck. Prov. Park, Calgary	D	ES et al.
Dec. 3	Bearspaw area, W of Calgary	G	DC,JS
1984			
Jan. 8	Springbank	-	RC
Jan. 11	1.2 km S Longview	G	WS,RW
Jan. 18	16 km ENE Gleichen	G	WS,RW
Feb. 8	16 km SE Calgary	G	WS
Feb. 29	7.2 km S Longview	G	AW
Feb. 29	4.8 km S Millarville	G	AW
Mar. 5	8 km S Longview	G	AW
Mar. 10	Rockyford	W	IH
Sept. 30	Windy Pt., Sheep River Sanct.	G	WS,RW
Nov. 3	Inglewood Bird Sanct., Calgary	D	CW,MW,RW
Nov. 4	McKinnon Flats, S of Indus	G	WS,CW,MW,RW
Nov. 9	Simon's Valley Road, Calgary	G	LG
Dec. 1	Carburn Park, Calgary	-	JB
Dec. 29	Bottrel area	-	JPo et al.
1985			
Jan. 21	400 m S, 1.6 km W Shepard	G/D	RL
Jan. 23	Cominco area, Calgary	D	AS
Jan. 27	Coach Hill Rd., Jct. Hwy. 22	G	DC,JS,RS
Feb. 1	4.8 km S, 1.6 km W Shepard	G	RL
Mar. 17	Water Valley	G/D	OD,DE,LS
Mar. 28	3.2 km E Jct. Deerfoot, Hwy. 22	D	LG
Oct. 19	19.2 km W Turner Valley	G	WS
Nov. 21	Connemara	W	JR
Dec. 7	Pirmez Creek	G	DC,JPo
Dec. 8	Carburn Park, Calgary	G	SA,DSc,RS
Dec. 8	8 km NW Kathyrn	G	RW
Dec. 15	Water Valley	G	DC,JPo
Dec. 22	800 m E Calgary via Glenmore Tr.	G	DE

1 G = grey phase; D = dark phase; W = white phase; Lgt = light color (counted 50% for each grey and white); G/D = grey to dark color (counted 50% for each of grey and dark).

2 S. Alexander (SA); E. Baldwin (EB); N. Banks (NB); J.Bargman (JB); D. Beacham (DB); E. Beacham (EB); B. Burrows (BB); R. Butot (RB); J. Campbell Sr. (JC Sr.); J. Campbell Jr. (JC Jr.); R. Clarke (RC); D. Collister (DC); D. Dekker (DD); O. Droppo (OD); D. Elphinstone (DE); D. Eslinger (DEs); L. Foster (LF); W. Foster (WF); L. Guillemette (LG); W. Hall (WH); I. Halladay (IH); S. Holohan (SH); E. Jones (EJ); R. Klauke (RK); R. Lein (RL); M. Hampson (MH); B. Masters (BM); C. McGougan (CM); W. McKay (WM); M. McNicholl (MM); K. Mleziva (KM); S. O'Keefe (SO); E. O'Keefe (EO); H. Pinel (HP); J. Podlubny (JPo); J. Price (JPr); J. Riddell (JR); C. Robinson (CR); I. Sadler (IS); T. Sadler (TS); D. Schiffner (DSc); L. Sedgewick (LSe); N. Sedgewick (NSe); L. Sewell (LS); P. Sherrington (PSh); B. Sherrington (BSh); A. Slater (AS); D. Smee (DSm); W. Smith (WS); E. Spalding (ES); J. Steeves (JS); M. Steeves (MS): A. Stiles (ASt); D. Stiles (DSt); P. Stiles (PSt); N. Stokke (NS); R. Storms (RS); Gord Wagner (GoW); Greg Wagner (GrW); C. Wershler (CW); M. Wershler (MW); R. Wershler (RW); W. Wilson (WW); A. Wiseley (AW); R. Woods (RWo).

Black Swift Nests at Maligne Canyon, Jasper National Park

Geoffrey L. Holroyd and W. Michael Holroyd

Black Swifts breed in western North America from Alaska south to Costa Rica (Godfrey 1986). The first known inland nesting site was at Johnston Canyon, Banff National Park (Bent 1940) and they still nest there (Kondla 1973 and unpub. data).

In Jasper National Park they were first reported in August 1953 when Banfield found a nest in a cave above Brazeau Lake (Jasper warden files). Black Swifts have been reported several times over Sunwapta and Athabasca falls (Holroyd and Van Tighem 1983 and unpub. data), but no nest has ever been found at either site. However, most sightings in Jasper National Park have been near Maligne Canyon, 7 km northeast of the town of Jasper, near the junction of the Maligne and Athabasca rivers.

Although Holroyd and Van Tighem (1983) report a nesting colony at Maligne Canyon, Black Swift nests had not been seen in the canyon. Up to 12 Black Swifts have been seen flying over, into and out of Maligne Canyon since 1975 by the senior author and others, leading to the assumption that at least six pairs nest in the canyon.

Maligne Canyon is about 1 km long and up to 50 m deep (just below 2nd bridge). The canyon walls are layered sedimentary rocks with many fractures and ledges. It is at an elevation of 1040 to 1160 m a.s.l. and surrounded by coniferous forest dominated by Lodgepole Pine (Pinus contorta) and White Spruce (Picea glauca). During summer the canyon is relatively inaccessible to humans (without rock climbing equipment). However, in winter, the creek bed is frozen and partly bare due to underground drainage of the creek. For about ten years, "canyon crawls" have been conducted in the canyon in winter. During this time no nests have been reported although few people may have actually looked.

This article reports our successful search of the canyon for swift nests in February 1987.

Methods

Our search of the canyon was conducted on foot on 27 February 1987 from 1400 to 1700 hours MST. We searched from 4th bridge to 3rd bridge waterfall and 3rd bridge to about 100 m upstream of 2nd bridge. The waterfall at 3rd bridge was not accessible or searched.

Results

Numerous ledges and green algae-like smears were found on the canyon walls. The first site was found and immediately identified as a nest by the junior author who has been watching Black Swifts for nine years since he was ten days old. This site was on the left cliff directly beneath the 4th bridge and about 10 m above the valley floor. Nest 2 was upstream about 5 m and on the right bank about 15 m high. Nest 3 was below the 3rd bridge downstream of the base of the waterfall. Other sites could be located at this waterfall but ice conditions did not allow us to explore the area. Between Nest 1 and 3 there were at least 10 possible sites that were vacant which could hold swift nests.

Above the 3rd bridge there is a stretch of canyon which is relatively open and no likely sites were observed. Approximately 100 m below the 2nd bridge were three nests. Nests 4 and 5 were on the left cliff about 6 m above the floor and less than 2 m above the high water mark. Nest 6 was on the right cliff opposite Nests 4 and 5 and at the same height. Nest 7 was lying on the ice about 25 m downstream of the 2nd bridge. The nest had fallen from a ledge under an overhang on the left cliff and is now in the collection of the Provincial Museum of Alberta. Nest 8 was 20 m above the floor.

Our progress up the canyon was stopped by a high weak ice ledge. Just above this spot is another waterfall and then more canyon past bridge 1 up to the bridge over the Maligne road.

Nest 7 is made almost entirely of feather moss (Hylocomium splendens). Most of the moss is brown, but a few strands at the edge are green. A few needles of Lodgepole Pine are incorporated into the nest and exposed on the inside which is also covered with feather scale indicating that young were successfully fledged in the nest, although no droppings are present in the nest. The outside rim of the nest measures 13.5 by 11 cm and the inside is 8.5 by 7 cm. The lip of the nest is quite shallow, 1.5 cm above the bottom of the nest. The nest at the base is 1 to 3 cm thick. The variation is due to the shape of the base of the nest which was formed to the rocks on which it was built. From the shape of the bottom it appears that the nest hung over the edge of the rocks about 5 cm which presumably predisposed it to fall.

Discussion

With over ten years' records of swifts at the canyon, with nests observed in the canyon, and with feather scale in the nest that was collected, there seems little doubt that Black Swifts do in fact breed in Maligne Canyon, the third known nesting site in Alberta. The first two were Johnston Canyon and Brazeau Lake.

The presence of 8 nests indicates a number of likely breeding attempts although not all nests may be used in a given year. Our search covered approximately 50% of the canyon. Assuming that the nests are evenly scattered along the canyon, the likely number of nests is twice that which we saw.

Nest 7 is the first Black Swift nest collected in Alberta. Since the nest is built of moss and contains pine needles, it is apparent that the swifts alite on the ground to collect nest material. The moss is common along the edge of the canyon and may be collected near the nest site. The lack of droppings in the nest is the result of the behavior of the young to defecate out of the nest by propelling the dropping over the rim as it is expelled.

Acknowledgements

We thank Cleone Todgham who led our expedition up the canyon and Kevin Van Tighem who organized the trip and who, with Elisabeth Beaubien and Andy Raniseth, accompanied us. Ben Gadd provided the inspiration to check the canyon after 10 years of procrastinating by the senior author. Chief Park Warden Don Dumpleton gave us permission to transfer the nest to the Provincial Museum. Elisabeth Beaubien, R.W. Prach and Jim Salt commented on an earlier draft.

Literature Cited

Bent, A.C. 1940. Life histories of North American Cuckoos, Goatsuckers, Hummingbirds and their allies, Part II, pp. 254-271. Reprint, Dover Publications, N.Y.

Godfrey, W.E. 1986. The Birds of Canada. Revised Edition. National Museums of Canada, Ottawa. 595 pp.

Holroyd, G.L. and K.J. Van Tighem. 1983. The Ecological (Biophysical) Land Classification of Banff and Jasper National Park, Volume 3, The Wildlife Inventory. Canadian Wildlife Service, Edmonton, Alberta. 691 pp.

Kondla, N.G. 1973. Nesting of the Black Swift at Johnston's Canyon, Alberta. Can. Field-Nat. 17:64-65.

Authors' Addresses:

1. Canadian Wildlife Service, Room 200, 4999 - 98 Ave., Edmonton, Alberta T6B 2X3.
2. 4123 - 122 St., Edmonton, Alberta T6J 1Z1.

Photographs on following page were taken in Johnston Canyon, the upper photo shows a swift on its nest and the lower photo is the site of several nests, as indicated by arrows. (Photo: G. Holroyd).

Dragonflies of the Devonian Botanic Garden

Godo Stoyke

Only two recent studies of local dragonfly faunas have been conducted in Alberta: one privately published study of the fauna at the Clifford E. Lee Nature Sanctuary near Devon (Griffiths and Griffiths 1981) and a biogeographical study of the dragonflies at Cypress Hills (Hilton 1985). Together with random faunistic records (Acorn 1983; Cannings 1980, 1984; Cannings and Cannings 1983; Pritchard 1964; Walker 1953, 1958; Walker and Corbet 1975) these studies form an important basis for interpretation and conservation efforts. At present, no statements can be made on the status of endangered dragonfly species in Alberta. More localized and habitat-specific, as well as province-wide and species-specific, studies of the dragonfly fauna will be needed before their status can be evaluated reliably and appropriate conservation measures implemented. The aim of my study was to identify the dragonfly species at the Devonian Botanic Garden and to compare the findings to those from the other two locations.

The Devonian Botanic Garden (DBG) is located in central Alberta, 25 km southwest of Edmonton and 6 km north of the town of Devon. Sand dunes, which are the remnants of glacial Lake Edmonton, underlie the hilly topography of the Garden. As in most parts of Alberta, the sand dunes have been completely stabilized by vegetation. On the sandy, well-drained upland areas, Jack Pine, with an undergrowth of Bearberry and Wild Lily-of-the-Valley, dominates. Balsam Poplar dominates in the lower, wetter locations and Trembling Aspen and White Spruce communities occupy most of the remaining area, reflecting the nature of the surrounding mixed-wood boreal forest (Van Dyk et al. 1985).

Wetlands at the DBG

No extensive limnological records exist for the DBG. However, Van Dyk et al. (1985) have described the vascular plants of various wetlands at the DBG, including the larch fen, open marshes, and ponds, as well as pond margins.

My observations were restricted to the northern half of the Garden. Five independent bodies of water which exist year-round are found here. The largest of these, the Wetland Ecological Reserve (WER) on the northwest corner of the DBG, is a shallow, natural pond bordered by a willow-sedge community. The other four ponds were created artificially after flooding of large areas of the Garden in 1974. Except for the Calla Water, all ponds appear to freeze to the bottom in winter.

Numerous dragonfly exuviae (shed skins) can be found on the shore of both the WER and the Calla Water. Nymphs of a dragonfly (Suborder Anisoptera: *Sympetrum* sp.) and a damselfly (Suborder Zygoptera: *Lestes* sp.) from the Primula Dell Pond were reared to the imago (adult stage) in the lab for identification.

Study Period

Adult dragonflies were captured by aerial netting on numerous walks through the study area.

Records of dragonfly flight activity were made on 59 days throughout the 1986 dragonfly period at the DBG (May 20 - October 10, Fig.1).

Species Present

Twenty-one species of dragonflies and damselflies (Order Odonata) were observed at the Devonian Botanic Garden in 1986 (an additional species, *Libellula julia*, was observed once but could not be captured for confirmation). This represents 11% of the Canadian dragonfly fauna (195 species; Walker 1953, 1958; Walker and Corbet 1975; Cannings 1984) and 34% of the 62 species recorded for Alberta (Acorn 1983; Cannings 1984; Hilton 1985; Walker 1953, 1958; Walker and Corbet 1975). Additional species may be found in future studies but I believe that I have observed at least the more common species at the DBG.

The species were observed on the following dates in 1986 at the Garden (sequence follows Walker 1953, 1958; and Walker and Corbet 1975, by family). Following the records for the DBG are previous records for Alberta (AB) from Acorn (1983), Cannings and Cannings (1983), Griffiths and Griffiths (1981), Hilton (1985), Walker (1953, 1958), and Walker and Corbet (1975):

Lestidae (3)
Lestes congener: 31-VII, 7-VIII, 12-VIII, 14-VIII, 19-VIII, 18-IX, 19-IX. AB: Crowsnest Pass, Devon, Red Deer.

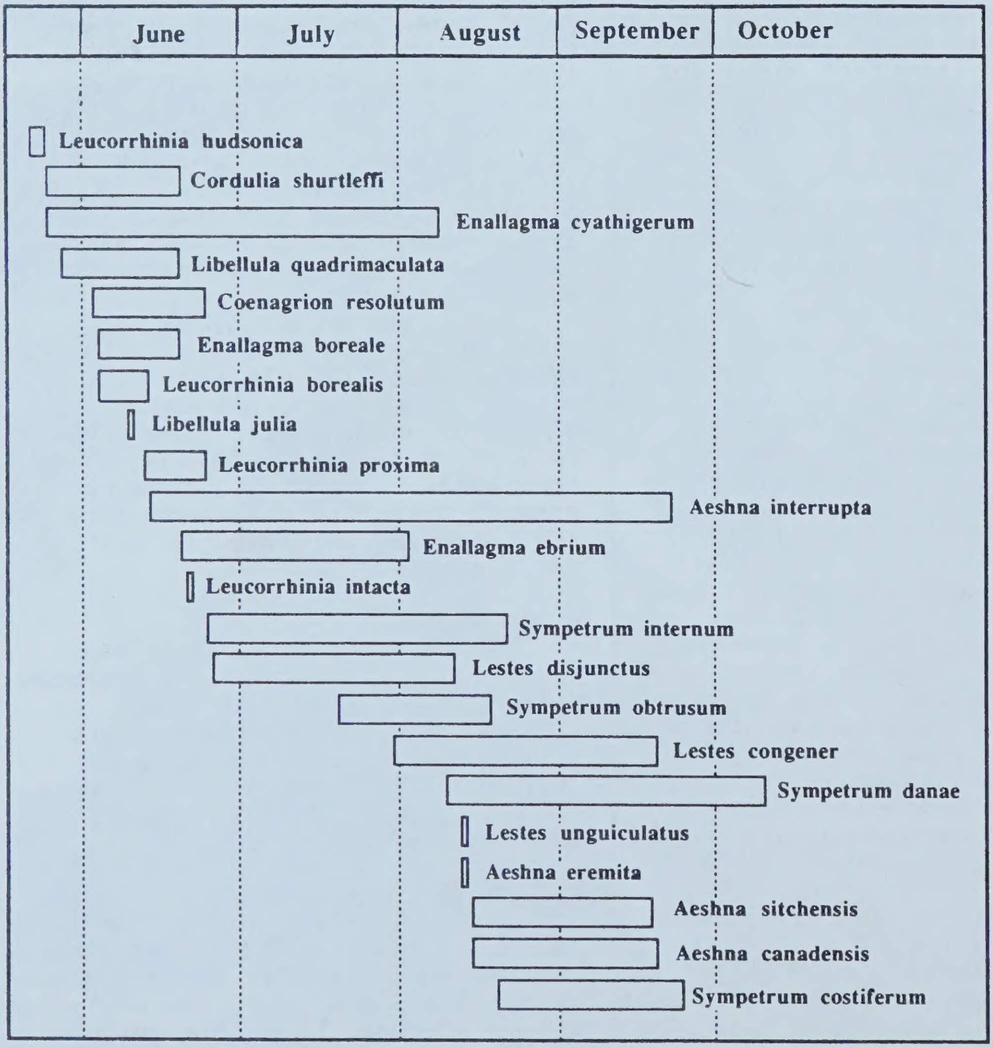


Figure 1. Dragonfly flight periods at the Devonian Botanic Garden in 1986.

Lestes disjunctus: 25-VI, 14-VII, 2-VIII, 12-VIII. AB: Banff, Blackfalds, Bow Valley Prov. Park (west boundary), Bragg Creek, Crowsnest Pass, Devon, Jasper Park, Lake Louise.

Lestes unguiculatus: 12-VIII. AB: Calgary, Kananaskis Valley, Medicine Hat, Onefour, Red Deer.

Coenagrionidae (4)

Coenagrion resolutum: 2-VI, 3-VI, 24-VI. AB: Banff, Blackfalds, Bragg Creek, Calgary, Devon, Nordegg, Red Deer, Stettler, Strathcona.

Enallagma boreale: 3-VI, 19-VI. AB: Banff, Blackfalds, Crowsnest Pass, Devon, Edmonton, Gull Lake, Jasper Park, Lake Louise, Nordegg, Red Deer, Vermilion Pass (Highway 93).

Enallagma cyathigerum: 23-V, 26-V, 3-VI, 5-VI, 9-VI, 19-VI, 14-VII, 31-VII, 9-VIII. AB: Athabasca Delta, Betty Lake, Blackfalds, Calgary, Claresholm, Devon, Hardisty, High River, Joffre, Lac La Biche, near Lake Louise, MacLeod, Neutral Hills, Nordegg, Red Deer, near Sedgewick, near Stettler.

Enallagma ebrium: 19-VI, 19-VII, 2-VIII. AB: Blackfalds, Devon, George Lake, Lesser Slave Lake, Red Deer.

Aeshnidae (4)

Aeshna canadensis: 14-VIII, 15-VIII, 20-VIII, 22-VIII, 8-IX, 9-IX, 17-IX, 19-IX. AB: Red Deer, Rocky Mountain House.

Aeshna eremita: 12-VIII. AB: Athabasca Landing, Blackfalds, Bow Valley, Crowsnest Pass, Devon, Flatbush, Ft. Smith, Healy Creek, Lake Louise, Red Deer, Rocky Mountain House, Vermilion Lakes.

Aeshna interrupta lineata:13-VI, 10-VII, 15-VII, 31-VII, 7-VIII, 9-VIII, 12-VIII, 15-VIII, 19-VIII, 20-VIII, 22-VIII, 3-IX, 8-IX, 19-IX, 24-IX. AB: Alix, Banff, Blackfalds, Devon, Edmonton, Flatbush, Gull Lake, Ft. Chipewyan, Ft. Smith, Jasper Park, Joffre, Lake Athabasca, Lake Louise, Red Deer, Rocky Mountain House, Stettler, Waterton Lakes.

Aeshna sitchensis: 14-VIII, 5-IX, 18-IX. AB: Banff, Blackfalds, Lake Louise, Nordegg, Rocky Mountain House.

Corduliidae (1)

Cordulia shurtleffi: 23-V, 26-V, 27-V, 2-VI, 3-VI, 12-VI, 19-VI. AB: Banff, Bragg Creek, Devon, Edmonton, Flatbush, Ft. Chipewyan, Ft. McMurray, Ft. Smith, Jasper Park (Marjorie Lake), Lake Athabasca, Nordegg, Red Deer, Rock Island Lake (Pelican Mountains), Rocky Mountain House.

Libellulidae (9)

Libellula quadrimaculata: 27-V, 2-VI, 9-VI, 12-VI, 19-VI. AB: Banff, Blackfalds, Buck Mountain (near Pigeon Lake), Devon, Ft. Smith, Hardisty, 50 km south of Lac La Biche, Red Deer, Rock Island Lake (Pelican Mountains), Rocky Mountain House.

Sumpetrum costiferum: 19-VIII, 3-IX, 7-IX, 16-IX, 17-IX, 18-IX, 24-IX. AB: Devon, Jasper Park, Patricia, Red Deer, Stettler.

Sympetrum danae: 9-VIII, 14-VIII, 19-VIII, 21-VIII, 10-IX, 17-IX, 18-IX, 19-IX, 24-IX, 10-X. AB: Banff, Beaver Lake, Blackfalds, Crowsnest Pass, Devon, Flatbush, Ft. Smith, Jasper Park, Lake Louise, Patricia, Red Deer, Rocky Mountain House, Vermilion Lakes.

Sympetrum internum: 24-VI, 25-VI, 14-VII, 19-VII, 22-VII, 24-VII, 31-VII, 1-VIII, 7-VIII, 13-VIII, 14-VIII, 19-VIII, 21-VIII. AB: Banff, Beaver Lake, Bragg Creek, Cardston, Claresholm, Devon, Edmonton, Flatbush, Gull Lake, Jasper Park, Patricia, Red Deer, Rocky Mountain House, Stettler, Waterton Lakes.

Sympetrum obtrusum: 19-VII, 14-VIII, 19-VIII. AB: Claresholm, Devon, near Flatbush, Rocky Mountain House, near Waterton Lakes.

Leucorrhinia borealis: 9-VI, 13-VI. AB: Athabasca River (near Lake Athabasca), Banff, Blackfalds, Buck Mountain (near Pigeon Lake), Devon, Edmonton, 19 km south of Ft. Smith, Hardisty, Lac La Biche, Lacombe, Neutral Hills, Red Deer, Rock Island Lake (Pelican Mountains).

Lestes disjunctus, unlike most other dragonflies, is common in forested habitats. (Photo: Thomas Heinbockel).

Leucorrhinia hudsonica: 20-V, 22-V. AB: Banff, Blackfalds, Devon, Flatbush, 180 km south of Ft. McMurray, 50 km south of Lac La Biche, Lake Louise, Nordegg, Rock Island (Pelican Mountains), Rocky Mountain House.
Leucorrhinia intacta: 20-VI. AB: near Big Knife Provincial Park, Devon, Red Deer.
Leucorrhinia proxima: 12-VI, 13-VI, 24-VI. AB: Banff, Devon, Flatbush, Jasper, Nordegg, Red Deer, Rocky Mountain House.

HUNTING AND MATING AREAS OF ADULT DRAGONFLIES

Specimens of Lestes spp. were the only dragonfly species frequently encountered in forest habitats at the Devonian Botanic Garden. The coenagrionids were found most frequently at the WER where numerous individuals were mating on the adjacent sand roadways. The Aeshna spp. usually patrolled the few natural meadows at the DBG, but were also found in other open areas (walkways, lawns, etc.). Cordulia shurtleffi and Libellula quadrimaculata commonly patrolled shorelines, while the Sympetrum and Leucorrhinia spp. were commonly found near ponds, as well as other open habitats.

Discussion

BIOGEOGRAPHY: With respect to the Canadian distribution, 95% (20/21) of the species collected at the Devonian Botanic Garden are distributed transcontinentally (Table 1). Only Leucorrhinia borealis is restricted to Northwestern Canada (definitions of biogeographic affinities follow Hilton 1985: 1134).

The Clifford E. Lee Nature Sanctuary has essentially the same biogeographic location as the DBG, being located approximately 2 km northwest of the Garden. Vegetation at the Sanctuary is similar to that found at the DBG except for the larger areas with natural cleared meadow vegetation, the larger open marsh area, the presence of temporary pools and a calcareous fen, and the absence of a muskeg (larch fen). Biogeographic affinities of the dragonfly species found at the Lee Sanctuary are the same as those of the species at the DBG except for the presence of a prairie species (Table 1), which may be explained by the large meadow areas mentioned above which are maintained artificially through controlled burning.

The Canadian distributions of the dragonfly species found at Cypress Hills Provincial Park differ somewhat from those of the two more northern sites (Table 1). Not surprisingly, species composition at Cypress Hills is characterized by the presence of southwestern species, more southern transcontinental species and two montane species (maximum elevation of the Cypress Hills plateau is 1466 m above sea level).

SPECIES COMPOSITION: Of the species found at the Devonian Botanic Garden 81% are also found at Cypress Hills and 86% are found at the Clifford E. Lee Nature Sanc-

Table 1. Biogeographic affinities of dragonfly species at three sites in Alberta, Canada.

	DBG		Lee Sanctuary[1]		Cypress Hills[2]	
	No.	%	No.	%	No.	%
Transcontinental	20	95	20	91	22	71
(Northern	10	48	9	41	13	42)
(Southern	4	19	4	18	7	26)
(General	6	29	7	32	2	6)
Western Boreal	1	5	1	5	2	6
Prairie	0	0	1	5	1	3
Southwestern	0	0	0	0	4	13
Montane	0	0	0	0	2	6
Total	21	100	22	100[3]	31	100[3]
pecies observed more than once	18		22		27	

1 Griffiths and Griffiths 1981.
2 Hilton 1985.
3 Does not add up to 100% due to rounding error.

Table 2. Comparison of habitat preferences of dragonfly species found exclusively at the Devonian Botanic Garden and the Clifford E. Lee Nature Sanctuary, respectively.

A. Species found at the Devonian Botanic Garden only:

Species[1]	Habitat Preference[2]
Aeshna canadensis	quiet marshy or bog-margined lakes, ponds and sluggish streams, not uncommon in *Sphagnum* bogs
A. sitchensis	muskeg pools or cold *Sphagnum* ponds

B. Species found at the Clifford E. Lee Nature Sanctuary only:

Species	Habitat Preference
Coenagrion angulatum	small shallow sloughs
Epitheca spinigera	marshy borders, not in muskegs or other stagnant waters
Lestes dryas	permanent or temporary pools
Nehalennia irene	stands of emergent vegetation

1 Species observed only once at the site omitted.
2 Based on Walker (1953, 1958) and Walker and Corbet (1975).

tuary. The Sanctuary, as well as the portion of the DBG investigated, both cover approximately 60 ha. Both of the species found exclusively at the DBG prefer muskegs or boggy water. Since aeshnids are very strong fliers, it is quite possible that the specimens captured on the northern portion of the DBG originated from the muskeg harbouring the larch community. This proposition could be tested easily by closer examination of the southern portion of the DBG in the next season.

Walker (1953:103, Table 2) reports Lestes dryas to prefer permanent or temporary pools. However, L. dryas is reported by Griffiths and Griffiths (1981:9) to be restricted to the temporary pools of the interior marshes at the Sanctuary. Also, L. dryas is not found at the DBG - which lacks temporary ponds - indicating that L. dryas may be restricted to temporary ponds in our region.

The presence of the other three species found exclusively at the Sanctuary could be explained by the larger areas of open marsh at the Sanctuary, as well as the absence of any vegetated, temporary pools at the DBG.

Comparison of habitat preferences of the species at the DBG to those at Cypress Hills are difficult since Hilton (1985) provides neither detailed vegetation analyses, nor sizes of the sites investigated. However, species number at what appears to be the largest site at Cypress Hills (site A, Hilton 1985) is not significantly higher than species number at the DBG.

CONCLUSION: Biogeographic affinities of the species reflect the geographic locations of the sites. Similarly, habitat preferences of the species observed appear to be fairly consistent with those reported in the literature. However, use of a standardized wetland habitat classification system in future studies would greatly facilitate comparison of geographically disjunct study sites. It is interesting that the close proximity and only slight habitat differences of the Sanctuary and the DBG nevertheless result in a 14% species difference. This indicates that a whole network of ecological reserves may be necessary in any one bio-region in order to preserve the full range of species.

Acknowledgements

I would like to thank the Devonian Botanic Garden for permission to use their site for study. Thanks also to Lois Fenna and Gordon Nielson for review of the manuscript.

Literature Cited

Acorn, J.H. 1983. New distribution records of Odonata from Alberta, Canada. Notulae Odonatologicae 2: 17-19.

Cannings, R.A. 1980. Some Odonata from the Crowsnest Pass region, Alberta, Canada. Notulae Odonatologicae 1:88-89.

_____. 1984. Noteworthy Odonata collected by participants in the Seventh International Symposium of Odonatology. Notulae Odonatologicae 2:53-55.

Cannings, R.A. and S.G. Cannings. 1983. Odonata collected in Banff National Park, Alberta, Canada, during the Seventh International Symposium of Odonatology. Notulae Odonatologicae 2:23-24.

Griffiths, G.C.D. and D.E. Griffiths. 1981. Preliminary insect survey of the Clifford E. Lee Nature Sanctuary (Alberta) during 1980. Published by the Clifford E. Lee Nature Sanctuary Management Committee. (A copy of this study may be viewed at the Department of Entomology, University of Alberta, Edmonton.)

Hilton, D.F.J. 1985. Dragonflies (Odonata) of Cypress Hills Provincial Park, Alberta and their biogeographic significance. Canadian Entomologist 117:1127-1136.

Pritchard, G. 1964. The prey of adult dragonflies in northern Alberta. Canadian Entomologist 95:821-825.

Walker, E.M. 1953. The Odonata of Canada and Alaska. Volume 1. University of Toronto Press, Toronto, Ontario.

_____. 1958. The Odonata of Canada and Alaska. Volume 2. University of Toronto Press, Toronto, Ontario.

Walker, E.M. and P.S. Corbet. 1975. The Odonata of Canada and Alaska. Volume 3. University of Toronto Press, Toronto, Ontario.

Van Dyk, M., R. Currah, and A. Smreciu. 1985. Wild Flowers of the Sandhills: Devonian Botanic Garden. Friends of the Devonian Botanic Garden, Edmonton, Alberta.

Author's Address:
10554-83 Ave., Edmonton, Alberta T6E 2C9.

Kerry Wood: Recipient of the 12th Loran L. Goulden Memorial Award

Sandy Murray

Edgar Allardyce (Kerry) Wood was born June 2, 1907 in New York. In 1909 he moved with his family to St. Thomas Ontario, and later to Winnipeg, Esterhazy Saskatchewan, Lethbridge, Calgary and finally Red Deer in 1918, where he has lived since.

Boyhood summers in Esterhazy and on a ranch near High River sparked his interest in nature and outdoor life. At the age of 12, he joined the Alberta Natural History Society, and subsequently became very interested in the protection of the Gaetz Lake Sanctuary. Later, through the efforts of Red Deer pioneer J.J. Gaetz, he was made an Honorary Canadian Wildlife Officer. In 1924, Mr. Gaetz's property, which Mr. Wood had worked so hard to preserve, was designated a Dominion Bird Sanctuary and Wildlife Refuge. In the years following, Mr. Wood gave to the Sanctuary years of devotion and honour.

Kerry Wood in the field (Photo: Kerry Wood).

While still a very young naturalist, Mr. Wood rubbed shoulders with many prominent naturalists, e.g. Dr. Henry George, who formed the initial Territorial Natural History Society in 1904, Charles H. Snell, the noted surveyor, Dr. Charles Sternberg, pioneer paleontologist, and the renowned ornithologist, P.A. Taverner. He earned the respect of them all.

Mr. Wood sent monthly reports on the flora and fauna of the Sanctuary to the CWS headquarters and the Canadian Field-Naturalist. As Mr. Wood's reputation as a naturalist spread, experts were directed to him whenever they visited Western Canada.

Mr. Wood became involved with the Scouting movement, and in 1921 was the first in the province to receive the Naturalist's Badge which was awarded to him by the Governor General, Viscount Byng. He was Red Deer's first King Scout, and in recognition, he was delegated by the mayor to present a letter of welcome and escort Lord and Lady Baden Powell when they came through on their first trans-Canada tour in 1923.

It was while he was acting Scoutmaster, still only in his late teens, that he began selling the stories he had been writing. It was at this time that he adopted the pen name by which he became so widely known: Kerry Wood. When he resigned from active leadership of the Scouts in the late 1920's he was presented the Gold Thanks Badge.

At the age of 16, he was living on his own and supporting himself by full time writing. His stories of near starvation, illness, and loneliness are told in his book Wild Winter (1954).

Mr. Wood's reports to the CWS of cycles of populations of meadowmice, rabbits and grouse were distributed widely to naturalists and universities and at age 19 he was offered his first honorary degree - by a California university. At the same time he was offered an honorary Chieftainship of the Cree Indians - a measure of very high respect by the Cree.

He married Marjorie Marshall in 1936. She became his constant companion and with him later shared many honors.

In 1934 he was appointed Red Deer reporter for the Edmonton Bulletin, Edmonton Journal, Calgary Herald and Calgary Albertan.

At this same time his stories were reaching readers in Canada, the U.S., Europe and Australia. His stories have appeared in almost 50 English language magazines and journals. His works have been translated into several languages, including Braille, and he has been awarded honors as a writer by many of these magazines.

In 1936, in order to supplement his sparse income, he began to make and sell archery tackle. His proficiency as a craftsman spread quickly and soon he was selling archery equipment across Canada and the U.S.

In 1939 he began a 35 year part time career on radio and television, and during WW II his broadcasts were heard on the International Overseas Service. Some of his regular programs were: The Kerry Wood Storybook and Outdoors With Kerry Wood. When Queen Elizabeth II and Prince Phillip toured Canada in 1959, it was Kerry Wood who provided the commentary during their tour of the Provincial Museum of Natural History in Regina.

In 1947 Mr. Wood resigned his 15 year post as Secretary of the Red Deer Library Board, and at about that time he began to publish a monthly nature newsletter which was distributed to "shut-ins" across Canada.

In the 1950s the books of Kerry Wood were published in great numbers. Two of them, The Map Maker (1955), the story of David Thompson, and The Great Chief (1957), the story of Maskepetoon, Peace Chief of the Crees, won the Governor General's Silver Medals in their respective years for Canada's best literature for children.

During these years he frequently travelled across Canada doing research and was a much sought after speaker for writers' and naturalists' organizations.

In the 1960s Mr. Wood received many honors from writers, naturalists' organizations and universities - far too numerous to mention. Meanwhile, MacMillan, Houghton Mifflin, and Collins Sons continued to publish his numerous books. In addition, Mr. and Mrs. Wood published many of their own books. By 1967 it was estimated that over 500,000 Canadian school children had read Kerry Wood books.

In 1969 Mr. Wood was granted Honorary Life Membership in the Alberta Natural History Society and the Federation of Alberta Naturalists.

In a ceremony in Red Deer in the summer of 1986, The Kerry Wood Nature Centre was opened - the interpretive centre for the Gaetz Lakes Sanctuary which he loves so much.

Mr. Wood and his wife Marjorie live in quiet seclusion near Red Deer after having devoted over 65 years to natural history. Their quiet acreage is a refuge for 120 species of birds, many of which can be seen eating out of the hands of this gentle man of nature.

During his lifetime as a naturalist, Mr. Wood has published 6200 short stories, 8000 articles, 9000 newspaper columns, hundreds of television scripts, and more than 20 books. His stories continue to be heard on CBC radio, and his most recent book, A Legacy of Laughter (1986) is doing well on the bookstands. Mr. Wood is far from finishing his publishing career.

Mr. Kerry Wood has been and continues to be an inspiration to naturalists around the world. His dedication to the preservation of natural habitat has inspired the creation of 26 wildlife sanctuaries throughout North America, which will remain as an enduring and worthwhile testimonial to Kerry Wood's extraordinary contributions to the environment.

Author's Address:
R.R. 4, Site 2, Box 25, Red Deer, Alberta
T4N 5E4

The Sundown Squirrels

Kerry Wood

Rumpled folds of fur and flattened tails of six Northern Flying Squirrels have been left on the hard-packed snow beneath our main suet feeder. The remains were found over a month's time starting in mid-December last, with only minute skull fragments remaining for two of them. All flesh had been cleaned away as slickly as though done by a professional anatomist preparing a specimen for mounting.

The surrounding woodlands provide ideal habitat for these flying squirrels. Dense stands of mature poplar and spruce virtually encircle our house, save for a nearby grassy meadow where assorted ornamental and apple trees flourish. Amid these wild forested parts are many old stumps pocked by woodpeckers constructing their nesting cavities. Any of these cavities found abandoned are readily accepted by the squirrels for their own drays. While foraging after dark the sundown squirrels glide from tree to tree exploring every nook and crevice in search of food. Their summer diet consists of almost anything edible they can find, including mushrooms, berries, and bird eggs; cone seeds, dried fruit, and torpid insects provide their winter fare. For many years the more adventuresome of them have been visiting our cluster of bird feeders and we have used flashlights to watch the big-eyed animals. As a rule they have not taken fright, content to feed on suet and sunflower seeds. Mysteriously, six have died at the feeder this winter.

Consider this scenario. The trees in the poplar bluff lie about 90 m to the east and stand about 9 m high. A flying squirrel launching itself from the top of one such poplar cannot glide far enough to reach our nearby immature jack pine. In the past, snow tracks have revealed that the flying squirrels come a cropper a few lively jumps short of the pine. They have then scooted up the stunted tree to leap from one of its needled branches, their next destination being the power pole next to the house. Again the distance proved too far for the glider. But no matter, by then the animal was within reach of the suet feeders arranged next to the fence.

Enter a Great Horned Owl, one of two that have been within hooting distance all through December and early January. Perhaps it was already waiting atop the power pole. There would have been a silent, ghostly swoop and a deadly clinching of sharp black talons. Six times this strategy has succeeded in providing one of them with a meal of the squirrels' meat and bones, with only the flat tails and portions of the cleanly picked skin left behind for us to find in the morning.

Why not blame a weasel? They have been here; indeed, we have photographs to prove that weasels visit our suet feeders. But after a kill a weasel's instinct is to drag any movable trophy into seclusion. Had a weasel killed a nocturnal squirrel it could not have consumed the bones, nor would it have left the skin and tail in the condition we found them. Therefore, we feel sure that one of the Great Horned Owls patrolling the area has been the responsible hunter. Some added proof is that my wife and I saw one leaving the power post in the first light of dawn on Boxing Day.

Author's Address:
Site 3, R.R. 2, Red Deer, Alberta T4N 5E2

Flying
Squirrel
(Photo:
Edgar T.
Jones).

NATURALISTS BOOKSHELF

A Legacy of Laughter

Kerry Wood. 1986. Lone Pine Publishing, #14, 10357 - 109 Street, Edmonton, Alberta, T5J 1N3. Softcover, $8.95.

The simple, journalistic writing style employed by Kerry Wood blends well with his sense of humor and sensitivity to nature and wildlife. There is something for everyone in this easy to read autobiography, though it is perhaps best suited for young readers. This should come as no surprise as Wood devoted many of his thousands of publications to a younger audience. An avid amateur naturalist, Wood made use of his career as a journalist to share his knowledge and experience through countless newspaper and magazine articles.

This particular collection of short stories represents an animated excursion through the life of Kerry Wood, much of which has been spent in and around Red Deer. The anecdotes described here are a refreshing and often humorous look at one person's contacts with the environment. Growing up near the Gaetz Lakes when the area was a private reserve afforded many opportunities for the young boy to explore and learn about wildfowl, to observe phenomena rare even then, such as a mass salamander migration, and to recognize the special requirements of each species, rare and common. We are also given brief glimpses of the changes which have occurred in southern Alberta in the years since the Depression: the spread of cultivation and urbanization, drainage of wetlands, and outright slaughter of wildlife, which have resulted in the loss of habitat and in diminishing populations. Thankfully, and through the efforts of people like Kerry Wood, we can also see that attitudes have improved over the years. Wood spent considerable energy in helping to heighten awareness and appreciation for nature. He was instrumental in establishing the Gaetz Lakes Sanctuary and many of Western Canada's other wildlife sanctuaries.

Wood's attitude comes out clearly in his writing and in the cartoon style drawings which accompany them: to find beauty and laughter in our environment and ourselves increases our appreciation and justifies the seriousness with which we pursue our conservation endeavors.

D. M. Fabijan

Winter Here and Now

Joy Finlay. 1982. Aspen House Productions Ltd., Edmonton, Alberta. 138 pp. $ 8.95, paper.

Winter Here And Now is a collection of natural history activities and information assembled to encourage teachers and youth group leaders to help their charges get the most out of everyone's favourite season.

In the opening chapter Joy describes her "snow program web" approach to winter studies. Her suggestion that leaders collect ideas from students in brainstorming sessions leads to the development of six subjects under which subsequent activities are loosely grouped. "Here and Now", "Snowshoes", "Animals in Winter", "Plants in Winter", "Snow Studies", and "People in Winter" give the reader a sense of what sorts of information will follow.

Unfortunately, it is not easy to find that information. The remaining chapter titles make sense after one has read their contents but offer little insight before the fact as to what lies within. For example, the chapter "Stories in the Snow" includes well - illustrated mammal and bird track sections (and a useful sample track recording sheet suitable for classroom use), and lengthy stories about ruffed grouse and snow fleas. Regrettably, these last two topics are titled "Snow Bound" and "Black Dot Phenomenon", respectively, in the Table of Contents. Though appropriate in retrospect, these titles are not very informative in advance.

The "Snow and More Snow" chapter gives detailed instructions for making snow measurement equipment for hardness, density and compaction. It also provides interesting comparisons of various Native Canadian words for snow with the much more limited English vocabulary and introduces the reader to snow crystal classification.

"Winter Waiting" is the place to turn for information and activities for winter plant study. Again, clear annotated illustrations of deciduous twigs will enable the reader to distinguish several tree species. One might miss some valuable animal anecdotes tucked away in "The Understory" section.

Snowshoes, shelter building and winter clothing are covered in the final chapter, "Out and About".

Specific activity suggestions for groups to take outside with them are given in every chapter. Extension ideas are provided in most chapters in the areas of math, art, social studies, science, language arts, and recreation.

This is a compendium of winter ideas and is aimed, I think, at leaders of grades 4 - 6 students (age about 9 - 12 years). It is a book I have on my shelf but not one I refer to quickly, mostly because of its cryptic chapter titles. It offers a more holistic, integrated approach to winter time environmental education and thus is best absorbed by setting aside an hour or so and reading the whole book.

Liz Stinson

Mule Deer (Photo: Geoffrey Holroyd).

F.A.N. NEWS

Fall F.A.N. Meeting

September 11 - 13, 1987, Kerry Wood Nature Centre, 6300 - 45 Avenue, Red Deer.

Hosted by: The Red Deer River Naturalists, The Kerry Wood Nature Centre Association, Working Together for Wildlife.

Friday September 11
19:00 Registration: Kerry Wood Nature Centre. Wine and Cheese Party to follow slide presentation.

Saturday September 12
09:30 Registration: Kerry Wood Nature Centre.
10:00 Seminar: "Join the Club!", Kerry Wood Nature Centre.
10:00 Director's Meeting: Allen Bungalow, Nature Centre.
12:00 Lunch: Directors at the Allen Bungalow, others on your own.
13:00 Director's Meeting.

Field Trips
10:00 Gaetz Lakes Sanctuary. Meet at the Nature Centre.
13:00 Bicycle or Walking Tour of Waskasoo Park, Meet at the Kerry Wood Nature Centre. Bicycle rentals available at the Bower Ponds.

Evening Program
19:00 Barbeque and program at Heritage Ranch.

Sunday September 13
09:00 Field Trip to Slack's Slough Waterfowl Observation Area. Meet at Kerry Wood Nature Centre.

Saturday Seminar: "Join the Club!"

This is a seminar on how to form your own Naturalists' Society. Learn how to draw up a constitution, join the Federation, obtain funding, etc. in 3 (or so) easy lessons! This seminar will be offered only if sufficient registrations for it are received.

Accommodation: Lion's Campground in the City. Others are available. Call for further information. Motels are numerous in the City. Billets are available upon request.

Other Places of Interest: Red Deer and District Museum and Archives, Fort Normandeau Interpretive Centre.

For more information: Dr. S. J. Murray 342-5400 or Anna Robertson 346-2010.

Environmental Co-ordinator

SUMMARY OF ACTIVITIES DURING 1986

The Office of Environmental Co-ordinator (OEC) was begun in December of 1979 on a "shoe-string" budget. The office is staffed by one person working on a part-time basis as the Environmental Co-ordinator. The OEC, although recognized as being very beneficial, has put a tremendous financial burden on the five supporting associations. No direct financial assistance for the OEC has ever been received from the Government of Alberta. Only a couple of the associations involved have been able to contribute a full one-fifth share to the funding of the OEC through the years it has been functioning. Thus, today there is an accumulated debt of $4,200.00 for the OEC. This severely limits the functioning of the OEC.

The main shortfall of funds comes when the OEC takes on major projects, such as the Four Mountain Parks Planning Program. Thus, the OEC continues to financially "limp along" from month to month and still closes down for the two summer months. However, without question, the value of the OEC and the workload it handles have continued to grow. The OEC phone number and address remains in the Calgary and District telephone directory. There continues to be a noticeable increase in phone calls to the office from private citizens, industry, media and government agencies in Alberta and throughout western Canada.

The Office of Environmental Co-ordinator continued through 1986 to facilitate co-ordination and communication between the five associations which jointly fund the OEC: the Alberta Wilderness Association (AWA), the Federation of Alberta Naturalists (FAN), the Great Divide Trail Association (GDTA), the Canadian Parks and Wilderness Society (CPAWS), and the Sierra Club - Alberta Group. The OEC provided research assistance to these groups and helped keep them abreast of policies, planning programmes, developments, issues, etc., which have a bearing on each of the groups particular objectives. To assist in this major function, meetings between the individual OEC groups and Environmental Co-ordinator were held. As well, the Environmental Co-ordinator periodically attended the groups' regularly scheduled meetings.

SPECIFIC PRIORITIES FOR 1986

MAJOR: Four Mountain National Parks Planning and Individual Park Plans; Government Policies on grazing lease and Eastern Slopes public land sales; Upper Oldman Watershed; Game Ranching; South Castle and Waterton Biosphere Reserve; Provincial Management of Wilderness Dependent Species -- the grizzly bear and the threatened woodland caribou.
MINOR: Highwood Pass and Highway #40 winter closure; B.C. Wilderness Advisory Committee; Environmental Priorities - 1986 Election Questionnaire.

Diane Pachal

The Alberta Naturalist - A Profile

What is it? Who puts it together? When does it happen? Where does it happen? Why is it needed? How can you help? The objective of this brief profile is to answer these and other questions you may have about the Federation of Alberta Naturalists' periodical.

WHAT - The Alberta Naturalist is the official provincial naturalists' periodical; it has developed from a society newsletter first published in 1971 to its current format as a widely respected source of:
-original observation on natural history,
-significant studies on a wide range of natural history topics,
-summary reports for province-wide species counts,
-news about naturalist activities, and conservation issues,
-book reviews of natural history publications especially those on western Canada,
-ongoing compilation of references on the whole spectrum of Alberta natural history.

Black-and-white photographs, including a cover photo, and line drawings provide attractive illustrations for the articles.

WHO - A team of keen naturalists are instrumental in putting together the Alberta Naturalist. Each Alberta Naturalist depends upon contributors, some of whom are approached for articles, while others submit articles independently. The Editor reviews, edits, approves and organizes all material submitted, ensures that F.A.N. news is published on time, and he is responsible for keeping all costs of production of the Alberta Naturalist within budget; he receives a modest honorarium in appreciation for his efforts. The quality of each issue is greatly enhanced by its production layout, which is prepared by the Layout Editor from the typeset articles and from photographs donated by numerous naturalists; a similar modest honorarium is provided for the Layout Editor for his layout work and for quality-control liaison with the typesetter and printer. One or more Assistant Editors provide assistance to the Editor in reviewing articles and soliciting material. A Book Review Editor specifically assists the Editor by ensuring that books are requested from publishers for review and that knowledgeable individuals are invited to complete the reviews. Once copies of each issue are printed, a small group of Edmonton area naturalists gather to label, sort and bundle the Alberta Naturalist for distribution under Second Class Mail regulations. The Circulation Manager oversees the preparation of the mail-out bees, ensures the copies get to the post office before the end of the designated publishing month, and checks that all inserts meet postal guidelines; he is also responsible for soliciting advertising copy for the Alberta Naturalist and for organizing distribution of the Alberta Bird Record, a specialist periodical published by the Alberta Ornithological Records Committee, a committee of F.A.N.; he receives a small honorarium for his efforts.

WHEN - The Alberta Naturalist is a quarterly periodical, with publishing months being March, June, September, and December. Deadlines for submission of material for each issue are January 1, April 1, July 1 and October 1, respectively. Specific dates of submissions for species count projects are listed in the front of each issue.

WHERE - Material in the Alberta Naturalist refers to all or any part of Alberta. Occasionally articles of a broader nature from outside Alberta are published. The periodical is published in Edmonton, the site of the mailing address, but Editors have been from outside Edmonton (e.g. Calgary, Busby).

WHY - The Alberta Naturalist is an important repository of natural history records, assists communication among naturalists about conservation issues and is an attractive, high-quality, regional natural history publication. The A.N. fills a gap that is not adequately served by other publications. It is essential that a province the size of Alberta, larger than most European countries and with the broad natural diversity that exists here, should have natural history publications of the caliber of the Alberta Naturalist.

HOW - How can you be involved? The Federation is always seeking new subscribers; if you know of any naturalists who are not getting the A.N. now, why not encourage them to join or send them a gift membership? Have you made interesting wildlife sightings or found any notable plants? Why not jot down a brief note about them for the Editor? More extensive articles are always in demand, so do not feel shy about sending your natural history contributions. Are you interested in reviewing books or have you read a recent natural history book on which you wish to share your thoughts? Write our Book Review Editor for more information.

Currently, F.A.N. is looking for a new Editor and assistants. Do you have experience in and enthusiasm for editing a natural history publication? Do you have design or layout experience? We can use your help to keep the Alberta Naturalist on track and at its present high level of quality.

David M. Ealey

Letter to the Editor

It was very interesting to read the article on the Kitsim Project in the Winter issue of the A.N. That area encompasses the Breeding Bird Survey route which I have covered for 15 years. It might be of value to take a look at the changes which have taken place in the survey since work began on the project.

The route beings just north of the Highway 36 crossing of the Bow River. It follows Highway 36 for some kilometers of what used to be original short grass prairie but which now has a number of active oil wells, although the ground cover is still native vegetation. Near Rainier the route turns west and then south, then west again, eventually coming out at Bow City on the Bow River. Originally, after making the first westerly turn, the route ran through an area of irrigated land, and then through an expanse of community pasture with the original native grasses and sage brush before again running through farmland, this time dryland farming.

The last year that we covered the route under the former conditions was 1981. In 1982 the stretch of route which used to cross the community pasture on a road allowance (which used to be quite an adventure in itself) was blocked by a wall of dirt. We crossed this, very puzzled, and completed the route as usual. In 1983 when we came to the same wall of dirt we were dismayed to find a large expanse of water and a totally different bird population. Where there had been birds of the prairie, including Ferruginous Hawks and Burrowing Owls, we found great flocks of ducks and waders. On reporting the change (and the difficulty of continuing past the barrier of the new lake) we were told to change the route to 1.6 km further east. The route now runs through irrigated farming country which is an ornithological desert, except for the usual hordes of House Sparrows, Starlings and Magpies around the farmhouses.

I reviewed the records of the route before writing this letter, and I give the following table. The species I selected are those which occur on native grasslands and those which can exist on farmed land whether dry or irrigated. Some of the changes of course are due to changes in farming practices, not just the expansion of irrigation and the development of wetlands. For example, the crash in the pheasant population seems to be due mainly to farmers clearing out every patch of brush to extract the greatest return from their land.

The Kitsim Project seems to be a very successful endeavour balanced between conservation of wetland habitat and the needs of the farming community. I am very happy to see the restoration of wetlands to southern Alberta after we have lost so much in recent years. Unfortunately in this particular case it also created a loss of habitat for the upland birds and the birds of the native prairie, at least two of which are regarded as endangered species.

Elizabeth Hall

Birds recorded during Breeding Bird Surveys in the Kitsim Project Area of Alberta.

Species	1973	1981	1985	Comment
Chestnut-collared Longspur	201	213	93	
Savannah Sparrow	24	15	16	
Vesper Sparrow	16	14	17	seems to be able to cope with change
Marbled Godwit	57	33	14	
Long-billed Curlew	38	23	11	
Pheasant	26	15	3	
Ferruginous Hawk	-	11	1	9 and 10 in '78 and '80
Northern Harrier	7	6	2	highest count 17 in '78
Horned Lark	145	199	148	quite happy in stubble
Meadowlark	107	67	54	
Ducks (all species)	7	157	194	
Burrowing Owl	-	1	-	also seen in '80 and '82
Ring-billed Gull	110	399	445	

CLUB NEWS

Edmonton Natural History Club

The Edmonton Natural History Club's Bird Study Group was formed in January of this year. The orientation of this group revolves around teaching and learning about the natural history of birds through informal lectures, discussions, identification sessions and ornithological projects. The objectives of the group are:
1) to promote interest and enjoyment of birds;
2) to encourage people to learn more about birds through projects and study nights;
3) to encourage bird watchers to publish records in the Edmonton Naturalist, Alberta Bird Record, Alberta Naturalist, American Birds and other publications; and
4) to cooperate with other groups with similar interests.

The structure of the monthly meetings often will include a guest speaker who will give a talk on identification of difficult groups such as shorebirds, warblers, sparrows, owls, raptors, ducks, gulls or finches. After an identification talk, study skins will be available for close examination. Other guest speakers might address aspects of bird behavior and research, or discuss birding "hotspots" on both the local and regional level.

At the January meeting, Terry Thormin led the group on identification of winter finches. Other speakers will discuss ongoing projects that the group can get involved in, or even initiate. Projects such as the Breeding Bird Surveys, Bird Banding, Blue Bird Trails, Christmas Bird Counts, Endangered Species Surveys, International Shorebird Surveys, May-Day Counts, Birdathons, and Nest Record Cards all come to mind. These projects will allow interested members to get hands-on experience of ornithological research.

A good example of these lectures and the opportunity they provide is Jack Clements' lecture given in February which presented how individuals could get involved in obtaining data for the upcoming Alberta Bird Atlas.

During those months when an identification talk is not given, we will have a bird identification slide quiz or a bird call ientification session. Members are invited to volunteer to give these quizzes each month.

We will also discuss progress on our ongoing projects and propose new projects. We will need volunteers to organize project committees and keep the group updated on their activities. Currently, the bird study group is organizing a "Rare Bird Hotline" recording system where interested parties will be kept up to date on rare bird sightings. People will also be able to report their sightings to a recording committee that will publish the sightings in the Alberta Bird Record.

In addition, there will be regular question and answer sessions where members can query the general audience about aspects of the natural history of birds. If a member does not know the answer, the committee will look it up for the next meeting. For example: Do you know why so many winter finches have reddish tinged breasts? Come to the bird study group meetings to find out!

The Bird Study Group meets the fourth Tuesday of each month at 7:30 pm, in the lecture room of the Alberta Provincial Museum. If you have any questions about the group please contact any member of the organizing committee. The following is a list of that committee's membership.

Pat Marklevitz - 433-5946
John Moore - 464-1710
Mike Quinn - 438-3710
Terry Thormin - 482-1389
Darwin Wiggett - 465-2803
(chairman)

Darwin Wigget

Strathcona Natural History Group

The Strathcona Natural History Club was formed in August, 1985 to encourage Strathcona County residents of all ages and backgrounds to increase their knowledge and awareness of natural and ecological processes particularly in the county. Another goal was to provide a unified voice for resident naturalists on conservation issues; and to organize field meetings and other relevant activities. In January, 1987 the Club requested affiliation with the Edmonton Natural History Club and at the February executive meeting, the Strathcona Natural History Group was approved as an official entity of the Edmonton Natural History Club.

During the past two years the Strathcona group has been active in a number of projects and field trips. Members were instrumental in the installation of road signs along Highway 14 indicating areas where moose had been hit by motorists.

The Group has prepared briefs for the County General Municipal Plan and Outdoor Master Plan. It has also been an active member of the Public Advisory Committee for the Outdoor Master Plan, which when completed in October 1987, will provide a visionary guide for the protection, management, utilization and development of the County's environmental and outdoor recreation resources.

Group members have participated along with Fish and Wildlife, Strathcona Recreation and Parks, The Junior Forest Warden Association and the Natural Areas Office in the site development plan for Sherwood Park Natural Area, Strathcona County's Wildlife 87 project.

Group members also participated in the Elk Island Christmas Bird Count. Group members were also active in preventing the construction of a P.C.P. wood preservative plant in Strathcona Industrial Park near Fort Saskatchewan.

The Natural Areas designated in the County of Strathcona provide a number of sites visited by the group on their monthly field trips. One of the group's secondary objectives is to compile and update information on these unique areas, including a photographic record.

Currently the group is working on its Wildlife 87 project, a bus tour of a number of the County's unique areas, including the Strathcona Wilderness Area. Another project under consideration is the setting up of a nest box trail based on recommendations from the booklet "Nest Boxes for Alberta Birds."

If you would like to take part in the activities of the Strathcona Natural History Group, or would just like some further information please call Carol Smith (439-4954 days; 922-4002 evenings) or Diane Hayley (922-2527 evenings).

Wendy Zelt

ANNOUNCEMENTS

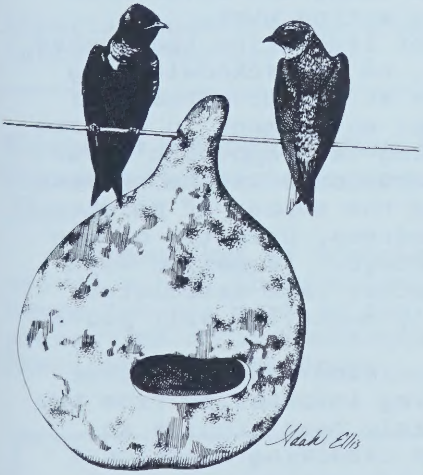
Purple Martin Colony Registry

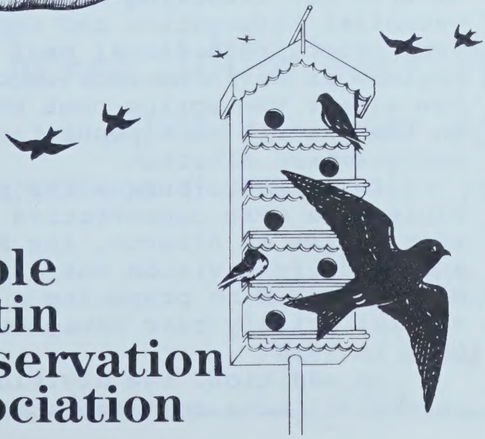
The Purple Martin is a bird which has been managed by man longer than any other North American bird species. Even before European man colonized the New World, native American Indians were enticing these companionable birds to nest in their villages by attaching hollowed-out gourd "nest boxes" to the support poles of their wigwams. Modern man has continued this gourd-using tradition to attract martins, but he also has taken to using elaborate wooden, plastic, or aluminum multi-compartmented bird condos (i.e. "martin houses") which he mounts on poles and proudly displays on his lawns.

Today however, this man-dependant species is declining within parts of its breeding range. In an attempt to remedy the situation, the Purple Martin Conservation

Association has been formed to help coordinate the management efforts of North America's martin landlords. Through its Colony Registry Program it is attempting to locate and register most of the martin colonies in North America in preparation for several worthwhile projects, including a continent-wide nest-record card scheme.

Your help is needed. If you know of someone who has a martin colony or is trying to attract one, or if you are interested in starting a colony yourself, please write to the P.M.C.A. You can further assist by looking for martin houses or gourds in peoples' yards during your travels. If you locate some, please try to obtain the mailing addresses from either the street and house numbers, rural mailboxes, phone books, or by stopping to inquire. Please send addresses to: P.M.C.A., P.O. Box 178, Edinboro, PA 16412, U.S.A.





Purple Martin Conservation Association

SCSA News Release

The Soil Conservation Society of America has added another Information-packed cartoon booklet - "Plants: Improving Our Environment" - to its series of conservation education units.

The new booklet and accompanying teacher's guide examine how important plants are to the environment. The materials cover four main concepts: (1) green plants supply humans and other animals with food (energy), oxygen, shelter, and water; (2) green plants are the only living things able to use the sun's energy to produce their own food; (3) there are many different kinds of green plants; (4) growing and conserving green plants is necessary to maintain a quality environment.

Children reading the booklet will discover how plants are used for pollution abatement, soil conservation, beautification, building materials, fuel, medicine, flavoring and more.

Granted three wishes by a comical, rhyme-speaking genie, skateboard enthusiasts Sylvia and George visit an urban forester, a farmer and a naturalist at a nature center in the story.

The file-folder format teacher's guide includes background information; sources of additional information; four activity masters; and 19 math, language arts, social studies, and science activities that reinforce and extend the educational concepts and that allow teachers to evaluate student progress.

SCSA develops its cartoon booklets with the guidance of educators and natural resource conservation professionals. The booklets are geared to help young people in the upper elementary grades understand the importance of natural resources and their wise use.

Single copies of "Plants: Improving Our Environment" are 75 cents (U.S.). The teacher's guide is $2.00. Substantial discounts as low as 12 cents per booklet and

$1.50 per guide are available on quantity purchases. For a free brochure describing all of SCSA's educational materials, contact SCSA, 7515 Northeast Ankeny Road, Ankeny, IA 50021; (515)289-2331.

Naturalists' Projects Guide

The Canadian Wildlife Service has just released the second "Directory of Cooperative Naturalists' Projects in Alberta: A Guide to Volunteers for 1987." This Wildlife '87 project lists over 20 projects that depend on knowledgeable naturalists to conserve and monitor wildlife and plants in Alberta. The objective of this directory is to provide information to prospective volunteers on naturalists' projects in the province which need your help. Each entry includes the areas of the project, qualifications and tasks for volunteers, and the name of the person to contact in order to take part. If you would like a free copy of the Directory, write to Dr. Geoffrey L. Holroyd, Canadian Wildlife Service, Room 230, 4999 - 98 Avenue, Edmonton, Alberta T6B 2X3.

Include an address label if possible.

Bird-Banding Workshop

As a contribution to Alberta's "Wildlife-87" celebration, the Beaverhill Bird Observatory and the Town of Tofield (close to Edmonton) are hosting the first annual Western Canada Bird-Banding Workshop and Conference, August 7-9, 1987.

The intention is to promote bird-banding in Western Canada and to establish rapport among active banders. Activities will include scientific presentations, "hands-on" workshops, and field trips to Beaverhill Lake with local experts.

All bird-banders, potential bird-banders, and other interested persons are welcome. For more information contact the Beaverhill Bird Observatory, P.O. Box 4943, Edmonton, Alberta T6E 5G8, ph: (403) 434-7446.

NOTES AND NEWS

No Increase in Grizzly Hunt Permits

The Fish and Wildlife Division has decided not to increase the number of hunting permits available in southwestern Alberta. However, the inclusion of Kananaskis Country into the area which will be open to hunting in southern Alberta will proceed as previously announced.

The original proposal which called for the issuing of an additional 25 permits has been abandoned. The 65 limited entry spring grizzly bear authorization hunt permits, which were previously available for four Wildlife Management Units (WMUs), will now be redistributed among the seven WMUs open to the spring hunt.

"By not increasing the number of permits, we are acknowledging that we are at the crossroads of grizzly bear management in Alberta with the long-term approach focusing on a more conservative harvest by reducing the number of permits," said Bob Andrews, Director of the Wildlife Branch. "Combined with the low success rate associated with grizzly hunts, it will prove effective."

The decision was made after incorporating information from two recent grizzly bear studies in Alberta and receiving additional technical information and input from other professional bear biologists in North America concerning the effect the spring hunt may have on the grizzly bear population in southwestern Alberta.

In order to pursue the principle of a more conservative harvest regime in Alberta, the Fish and Wildlife Division has also committed itself to preparing a provincial grizzly bear management plan in 1987.

In addition, the division presented three recommendations on grizzly bears to the Fish and Wildlife Advisory Council meeting held January 7-8 in Edmonton: 1. That the shooting of grizzly bears in family groups be prohibited. The intention is to protect females that may still have young. 2. That evidence of sex of grizzlies be retained until after registration. This will assist the division in monitoring the harvest. 3. That the spring general season be eliminated in Big Game Zones 2, 3 and 4 and that the grizzly bear seasons in these zones be continued using a limited entry spring grizzly bear authorization. Implementation in spring of 1988 will enable the division to have better control of the number of hunters, their distribution and potential harvest of grizzly bears throughout the province.

These recommendations were endorsed by the Advisory Council and will be considered for the 1987 hunting regulations.

Alberta Renewable Resources Newsletter, February 1987.

Canadian Whooping Crane Researcher Receives National Conservation Award

Ernie Kuyt of Edmonton has received a 1987 Chevron Conservation Award for his work in the study and protection of the endangered North American Whooping Crane.

Generally working alone in remote areas, often under adverse conditions, he has contributed, according to his peers, more than any other individual to the protection of the great bird.

A wildlife biologist for the Canadian Wildlife Service, he has monitored the breeding grounds and radio-tracked the crane's migratory flights across international boundaries from Alberta to Texas. He is credited with the discovery of the habitat of the crane population's non-breeding segment, as well as uncovering numerous facts about breeding and the birds' summer habitat.

A recent fact sheet printed by the Lands Directorate, Environment Canada provides a valuable summary of the conversion of wetlands across Canada. In the Prairie Provinces alone, it has been estimated that from the time of settlement until 1976, a total of 1.2 million hectares of wetland have been converted to agriculture. Alberta still retains about 11% of the total Canadian wetlands, but the total area of wetlands in the province continues to decline. Copies of this fact sheet (#86-4 entitled Wetlands in Canada: A Valuable Resource) are available from Lands Directorate, Environment Canada, Ottawa, Ontario K1A 0E7.

Dave Ealey

Alberta Wildflower Notecards and legends
perfect gift for naturalists
package 4 watercolor prints and envelopes — $5.00

Alberta Wildflower Notecards
1903-13 Ave. S., Lethbridge, Alberta
TIK OS3

Recent Publications on Alberta Natural History

Compiled by David M. Ealey and Martin K. McNicholl

Naturalists

Hallworth, B. 1987. Miss Marion Moodie, 1867-1958. Pica 7(1):24-27. -Calgary's pioneer nurse & botanist.

Holroyd, G.L. 1987. The role of the volunteer in wildlife conservation. Sialia 9:23-27.

Hum, S. 1987. A binocular guide. Pica 7(1):28-30.

Geology

Thomson, D. 1986. Caving in the Rockies. Can. Geog. 106(5):46-53.

Water

Campbell, C.E. and E.E. Prepas. 1986. Evaluation of factors related to the unusually low chlorophyll levels in prairie saline lakes. Can. J. Fish. Aquat. Sci. 43:846-854.

Munn, N. and E. Prepas. 1986. Seasonal dynamics of phosphorus partitioning and export in two streams in Alberta, Canada. Can. J. Fish. Aquat. Sci. 43:2464-2471.

Paleontology

Tokaryk, T.T. 1986. Collection of fossil vertebrates for the Saskatchewan Museum of Natural History, 1985. Blue Jay 44(3):150-152.

White, J.M. and R.W. Mathewes. 1986. Postglacial vegetation and climatic change in the upper Peace River district, Alberta. Can. J. Bot. 64(10):2305-2318.

Vascular Plants

Currah, R.S. and M. Van Dyk. 1986. A survey of some perennial vascular plants native to Alberta for occurrence of mycorrhizal fungi. Can. Field-Nat. 100(3):330-342.

Guy, R.D. 1987. Halophytes of Alberta - an introduction to their ways and means. Pica 7(1):12-18.

Haber, E. 1986. Rare and endangered plants of Canada: report of the plants subcommittee the Committee on the Status of Endangered Wildlife in Canada (COSEWIC). Can. Field-Nat. 100:400-403.

Johnson, J.D. 1987. A botanically interesting peatland in north-central Alberta. Alta. Nat. 17(1):1-3.

Johnson, J.D. 1987. Results of the 1986 May Species Count - plants in flower. Alta. Nat. 17(1):10-14.

Redmann, R.E. and A.G. Schwarz. 1986. Dry grassland plant communities in Wood Buffalo National Park, Alberta. Can. Field-Nat. 100:526-532.

Shay, J.M. and C.T. Shay. 1986. Prairie marshes in western Canada, with specific reference to the ecology of five emergent macrophytes. Can. J. Bot. 64:443-454.

Warner, B.G. and C.C. Chinnappa. 1986. Taxonomic implications and evolutionary trends in pollen of Canadian Ericales. Can. J. Bot. 64(12):3113-3126.

Trees

Argus, G.W. 1986. *Salix raupii*, Raup's Willow, new to the flora of Alberta and the Northwest Territories. Can. Field-Nat. 100:386-388.

Cwynar, L.C. and G.M. MacDonald. 1987. Geographical variation of lodgepole pine in relation to population history. Amer. Naturalist 129(3):463-469.

F.A.N. Membership Fees Are: Regular $15 per year; Supporting, $25 or more per year (with excess over $15 being deductible from your taxable income):

ENCLOSED IS $_______ COVERING A _______ YEAR REGULAR MEMBERSHIP

ENCLOSED IS $_______ COVERING A _______ YEAR SUPPORTING MEMBERSHIP

NAME ______________________________

ADDRESS ______________________________

____________________ POSTAL CODE ____________________

SEND TO:
FEDERATION OF ALBERTA NATURALISTS
Box 1472, Edmonton, Alberta T5J 2N5

Hrapko, J. 1986. Winter key to native trees of Alberta. Edmonton Nat. 14(4):17-24.

Ross, M.S., L.B. Flanagan, and G.H. LaRoi. 1986. Seasonal and successional changes in light quality and quantity in the understory of boreal forest ecosystems. Can. J. Bot. 64(11):2792-2799.

Invertebrates

Berte, S.B. and G. Pritchard. 1986. The life histories of *Limnephilus externus* Hagen, *Anabolia bimaculata* Walker, and *Nemotaulius hostilis* Hagen (Trichoptera, Limnephilidae) in a pond in southern Alberta, Canada. Can. J. Zool. 64(10):2348-2356.

Hegert, C. 1987. What happens to mosquitos in winter? Pica 7(1):31-33.

Hunter, F.F. and V. Connolly. 1986. A cytotaxonomic investigation of seven species in the *Eusimulium vernum* group (Diptera: Simuliidae). Can. J. Zool. 64(2):296-311.

Lasenby, D.C., T.G. Northcote, and M. Furst. 1986. Theory, practice, and effects of *Mysis relicta* introductions to North American and Scandinavian lakes. Can. J. Fish. Aquat. Sci. 43(6):1277-1284.

Locasciulli, O. and D.A. Boag. 1987. Microdistribution of terrestrial snails (Stylommatophora) in forest litter. Can. Field-Nat. 101(1):76-81.

Ogilvie, G.A. and H.F. Clifford. 1986. Life histories, production, and microdistribution of two caddisflies (Trichoptera) in a Rocky Mountain stream. Can. J. Zool. 64(12):2706-2716.

Proctor, H. 1987. Tiny hunters: the natural history of water mites. Pica 7(1):6-11.

Shipp, J.L. and W.S. Procunier. 1986. Seasonal occurrence of, development of, and the influences of selected environmental factors on the larvae of *Prosimulium* and *Simulium* species of blackflies (Diptera: *Simuliidae*) found in the rivers of southwestern Alberta. Can. J. Zool. 64:1491-1499.

Wrona, F.J., P. Calow, I. Ford, D.J. Baird, and L. Maltby. 1986. Estimating the abundance of stone-dwelling organisms: a new method. Can. J. Fish. Aquat. Sci. 43:2025-2035.

Parasites

Drew, M.L. and W.M. Samuel. 1986. Reproduction of the winter tick, *Dermacentor albipictus*, under field conditions in Alberta, Canada. Can. J. Zool. 64(3):714-721.

Fishes

Boag, T.D. 1987. Food habits of Bull Char, *Salvelinus confluentus*, and Rainbow Trout, *Salmo gairdneri*, coexisting in a foothills stream in northern Alberta. Can. Field-Nat. 101(1):56-62.

Donald, D.B. and D.J. Alger. 1986. Dynamics of unexploited and lightly exploited populations of Rainbow Trout (*Salmo gairdneri*) from coastal, montane, and subalpine lakes in western Canada. Can. J. Fish. Aquat. Sci. 43(9):1733-1741.

Donald, D.B. and D.J. Alger. 1986. Stunted Lake Trout (*Salvelinus namaycush*) from the Rocky Mountains. Can. J. Fish. Aquat. Sci. 43(3):608-612.

Pankhurst, N.W., N.E. Stacey, and G. Van Der Kraak. 1986. Reproductive development and plasma levels of reproductive hormones of goldeye, *Hiodon* alosoides Rafinesque, taken from the North Saskatchewan River during the open-water season. Can. J. Zool. 64(12):2843-2849.

Amphibians and Reptiles

Stark, M. 1985. A simple technique for trapping prairie rattlesnakes during spring emergence. Herp. Review 16:75-76.

Stark, M. 1987. An active prairie rattlesnake den taken over by foxes. Blue Jay 45(1):53-54.

Birds

Adamowicz, W.L., W.E. Phillips, and W.S. Pattison. 1986. The distribution of economic benefits from Alberta duck production. Wildl. Soc. Bull. 14:396-398.

Ainley, M. 1986. William Rowan and the experimental approach to ornithology. XIX Congressus Internationalis Ornithologicus Abstracts #103.

Anonymous. 1986. North American waterfowl management plan. May 1986. Can. Wildl. Serv. & U.S. Fish & Wildl. Serv. 34 pp.

Anonymous. 1986. North American waterfowl management plan. U.S. Fish & Wildl. Serv. & Can. Wildl. Serv. ii + 19 pp.

Armitage, D. 1986. The Trumpeter's resounding recovery. Can. Geog. 106(3):46-53.

Backhouse, F. 1986. Bluebird revival. Can. Geog. 106(2):32-39.

Burnside, F.L. 1987. Long-distance movements by Loggerhead Shrike. J. Field Ornithol. 58:62-65.

Clay, R.T. and J.W. Nelson. 1986. Waterfowl responses to backflood irrigation management. Colonial Waterbirds 9:203-209.

Collister, D. 1986. Summer 1986 - highlights. Alta. Bird Record 4:94-102.

Dekker, D. 1987. Veteran of a thousand hunts. Nature Canada 16(1):9. - Merlins.

Ebel, G.R.A. 1986. Highlights for the Beaverhill Bird Observatory annual report, 1984. Edmonton Nat. 14(4):6-14.

Gainer, B. 1986. Geese staging grounds in northern Alberta. Alta. Bird Record 4:93-94.

Gollop, J.B. 1986. The nesting season June 1 - July 31, 1986. Prairie provinces region. Amer. Birds 40:1218-1219.

Johns, B.W. 1986. 1986 spring Whooping Crane migration - prairie provinces. Blue Jay 44(3):174-176.

Johnson, J.D. 1987. Novel bird species to look for in Alberta. Alta. Nat. 17(1):15.

Johnson, J.D. 1987. An unintentional bird snare. Alta. Nat. 17(1):15.

Jones, E.T. 1987. Bird longevity records. Alta. Nat. 17(1):15.

Jones, E.T. 1987. Early observations of Barred Owl in Alberta. Blue Jay 45(1):31-32.

Knittle, E. 1985. Blackbirds are also marked. Nature Soc., News 20(7), reprinted in Ont. Bird Banding Newsletter 30(3):2-3, 1985.

Leblanc, Y. 1987. Relationships between sex of gosling and position in the laying sequence, egg mass, hatching size, and fledgling size. Auk 104(1):73-76.

Metras, L. 1986. Migratory birds killed in Canada during the 1985 season. Can. Wlidl. Serv. Progress Notes No. 166. 42 pp.

Metras, L. and S. Wendt. 1986. Migratory birds killed in Canada during the 1984 season. Can. wildl. Serv. Progress Notes No. 161. 39 pp.

Mitchell, T. 1987. An aerial duel: Merlin and Copper's Hawk. Pica 7(1):37-38.

Nelson, R.W. 1987. Where are the Alberta - released Peregrines? Alta. Nat. 17(1):4-9.

Nero, R.W. 1987. Additional records of Bald Eagles predaion of waterfowl. Blue Jay 45(1):28-29.

Quinn, M. 1986. The Cave-dwelling songsters. Edmonton Nat. 14(4):25-27.

Reebs, S.G. and D.A. Boag. 1987. Regurgitated pellets and late winter diet of Black-billed Magpies, *Pica pica*, in central Alberta. Can. Field-Nat. 101(1):108-110.

Rising, J.D. 1987. Geographic variation in testis size in Savannah Sparrows (*Passerculus sandwichensis*). Wilson Bull. 99:63-72.

Scharf, C.S. 1987. Sex determination of the Black-billed Magpie, *Pica pica*. Can. Field-Nat. 101(1):111-114.

Schmutz, J.K. and R.W. Fyfe. 1987. Migration and mortality of Alberta Ferruginous Hawks. Condor 89:169-174.

Stelter, D. 1987. The Elusive White-winged Crossbill. Alta. Nat. 17(1):16.

Stiles, D. 1987. Calgary area bluebird trails 1986. Pica 7(1):19-24.

Van Scheik, W.J. and V. Lewing. 1986. Double-crested Cormorant, *Phalacrocorax auritus*, egg ejection. Can. Field-Nat. 100:561-562.

Wendt, S., L. Metras, and A. Demers. 1986. Annual report to banders - summary of bird banding in Canada in 1982. Can. Wildl. Serv. Progress Notes No. 159. 10 pp.

Zammuto, R.M. 1986. Life histories of birds: clutch size, longevity, and body mass among North American game birds. Can. J. Zool. 64(12):2739-2749.

Mammals

Barclay, R. 1987. Bats of the Calgary area. Pica 7(1):2-5.

Dekker, D. 1986. Wolf, *Canis lupus*, numbers and colour phases in Jasper National Park, Alberta: 1965-1984. Can. Field-Nat. 100:550-553.

De Wit, L. 1987. On predator attraction in squirrels. Pica 7(1):31-33.

Dobson, F.S. and J.O. Murie. 1987. Interpretation of intraspecific life history patterns: evidence from Columbian Ground Squirrels. Amer. Naturalist 129(3):382-397.

Festa-Bianchet, M. 1986. Site fidelity and seasonal range use by Bighorn rams. Can. J. Zool. 64(10):2126-2132.

Geist, V. 1986. New evidence of high frequency of antler wounding in cervids. Can. J. Zool. 64(2):380-384.

Horejsi, B. 1987. Grizzly Bears and hunting in southern Alberta. Park News 22(4):10-11.

Hurst, V. 1986. The Pika. Can Geog. 106(4):28-33.

Lynch, W. 1986. Wild horses. Can Geog. 106(4):52-59.

Millar, J.S. and J.O. Schieck. 1986. An annual lipid cycle in a montane population of *Peromyscus maniculatus*. Can. J. Zool. 64(9):1981-1985.

Park, J.L. 1987. Red Squirrel harasses Sharp-shinned Hawk. Alta. Nat. 17(1):16.

Renecker, L.A. and R.J. Hudson. 1987. Seasonal energy expenditures and thermoregulatory responses of Moose. Can. J. Zool. 64(2):322-327.

Von Elsner-Schack, I. 1986. Habitat use by Mountain Goats, *Oreamnos americanus*, on the eastern slopes region of the Rocky Mountain at Mount Hamell, Alberta. Can. Field-Nat. 100:319-324.

Parks and Natural Areas

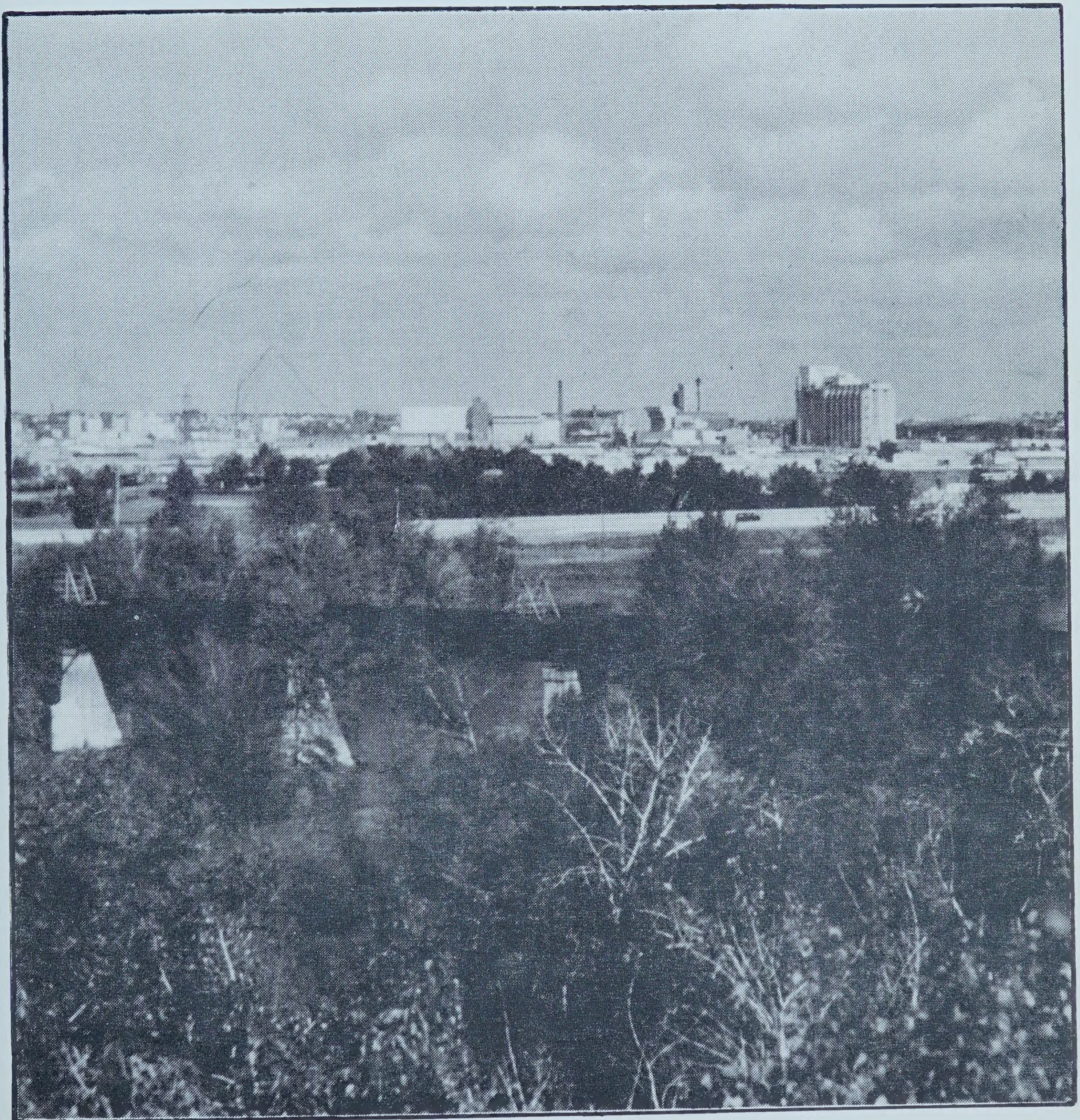
Dodge, D.G. 1986. Bare incidents in parks. Park News 22(4):27-29.

Development/Environment Problems

Gorrie, P. 1986. A new lease on life for Edmonton's valley villages. Can. Geog. 106(3):22-31.

ALBERTA NATURALIST

Volume 17, Number 3, Fall 1987



Beaverdam Flats, Urban Natural Area, Calgary
(Photo: Derek Johnson).

ALBERTA NATURALIST

Volume 17, Number 3, November 1987.

Published quarterly by the Federation of Alberta Naturalists
Box 1472, Edmonton, Alberta T5J 2N5

CONTENTS

Introduction by David M. Ealey...73

Comments made to the Urban Natural Areas Workshop.
Doug Balsden......................74

The Birds, The Bees and The Bedroom Community.
Gerry McKeating..................76

Calgary's Natural Areas.
David Elphinstone................80

Let's Get Personal.
Rob Gardner......................83

Natural Areas and The Nature Centre in Red Deer.
Jim Robertson....................85

The Development of Urban Wildlife Programs in the United States.
Daniel Leedy and Lowell Adams....89

Urban Wildlife Areas - A British Experience.
Robin Bovey.....................105

Panel Discussion - How do we promote the establishment and use of natural areas in and around urban centres?
1. Tony Nette...................109
2. Jim Posey....................110
3. Liz Stinson..................113
4. Bruce Richardson.............116
5. Peter Lee....................119
6. Donna Tingley................126

Urban Natural Areas in the Future.
David Spalding..................129

Bird Watchers of Point Pelee National Park, Canada:
James Butler and Gregory Fenton.135

* * * * * * * * *

FAN News and Announcements......147

The Alberta Naturalist is published quarterly by the Federation of Alberta Naturalists. Special issues may be published from time to time. Any material printed for the first time in the AN may be reproduced without permission; credit lines will be appreciated. All opinions expressed are those of the authors concerned and, except where stated, do not represent official F.A.N. policy.

ADVICE TO CONTRIBUTORS

Items for publication should be addressed to the Editor at the address below. Deadlines for submission of material for regular issues are: January 1, April 1, July 1, and October 1. All material submitted for publication must be typed, double-spaced, preferably on 8½"x11" paper. Maps, charts, and graphs should be submitted in "camera-ready" form if possible. Photographs accompanying an article should be submitted in the form of black and white prints on glossy paper. (Prints can be made from supplied colour slides or negatives if necessary.) Illustrative material will be returned on request. The author's name and a complete mailing address must be provided with the submission of material. Contributors should be aware that articles of a technical nature and those involving the sightings of rare species, range extensions, out of season records, etc. may be sent out for peer review. A complimentary copy of the issue in which a submission appears will be sent to authors. Information on advertising rates may be obtained from the Editor at the FAN Box No.

DEADLINES for FAN project reports are: *Alberta Christmas Bird Counts,* January 30, Andrew Slater, 152 Oakside Circle S.W., Calgary, AB. T2V 4H2; *May Species Count - Plants, Birds and Mammals,* July 15, J. Derek Johnson, Northern Forestry Centre, 5320 - 122 St., Edmonton, AB. T6H 3S5; Compiler cooperation is greatly appreciated.

Editor: Derek Johnson,
7109 - 106 St., Edmonton, Alberta T6E 4V5.
Telephones: 436-8231 home, 435-7306 work.
Assistant Editors: Dick Dekker, David M. Ealey
Graphic Design and assembly: Dick Dekker
Printing: Europe Offset Ltd.

ISSN 0318-5440. Postage paid at Edmonton, Alberta under Second Class Mail Registration No. 3604.

Urban Natural Areas Workshop - University of Calgary, January 24, 1987

Most Albertans are urban residents and many rarely leave the boundaries of their asphalt and concrete communities from one month to the next. Natural areas and parks provide relief from the harsh structures of our urban environments, but all too often they do not receive the consideration they deserve in urban planning efforts or from municipal governments.

The Urban Natural Areas Workshop, conducted at the University of Calgary, January 24, 1987, provided a public forum on the role, values and management of urban natural areas in Alberta. The following questions were posed: How important are urban natural areas? What are some of the successes, failures and problems of Albertan urban natural area programs?

Case histories from Toronto, Alberta municipalities, the United States and Great Britain set the stage. This was followed by a panel discussion on the topic "How do we promote the establishment and use of natural areas in and around urban centres?" Panel members included: a government wildlife biologist, a naturalist, an environmental educator, a city planner, a public lands planner, and a lawyer. The panel discussion was followed by a summation of the workshop by a Past President of the Federation of Alberta Naturalists.

The evening banquet speaker provided an insightful look at the bird watchers of Point Pelee, and his findings related to the management of urban natural areas in many regards.

Urban Natural Areas are often the only natural areas with which many Albertans are familiar. Their concern and appreciation of more extensive natural areas such as national parks, provincial parks or ecological reserves is directly related to the value and appreciation expressed towards natural areas close to home. These and other aspects of natural areas in and around urban sites formed part of the motivation for the workshop. Many other aspects were revealed during the workshop itself and are included in the following proceedings.

During my introduction to the workshop, I stated that there were three phases to a successful workshop, which distinguished it from a conference or symposium. First, the planning and running of the workshop should be structured to entice active participation from the registrants, and to encourage the development of subsequent plans of action. Second, the workshop results should be communicated as widely as possible, hence these proceedings. Third, and most important phase, is that some action should be generated as a result of the guidelines and good ideas presented. I look forward to many new initiatives in the field of urban natural areas in Alberta; the success of such areas are essential to the aims of the Federation of Alberta Naturalists.

by David M. Ealey

Past President, Federation of Alberta Naturalists, 3903-105 St., Edmonton, Alberta, T6J 2K7.

Comments Made to the Urban Natural Areas Workshop

Doug Balsden

Thank you David for the kind introduction. You made reference to my tenure in Alberta, which has been for quite some time, approximately 20 years. Much of that time has been spent in Calgary and more recently in Edmonton. It certainly is nice to be out of Edmonton, away from the smog of that big city and back to Calgary. I want to note that I am here to bring greetings on behalf of the Minister of Recreation and Parks, The Honourable Norm A. Weiss. The minister regrets that he is unable to attend, due to previous commitments in his Constituency. I should make mention as well, that Mr. Weiss is very supportive of efforts of organizations such as the Federation of Alberta Naturalists and the activities and services, particularly volunteer organizations such as this, provide. The Minister is a very sincere and objective person with respect to his commitments, and certainly views this kind of activity in a very committed way.

Under the Minister's direction, the Department has been involved in a number of programs which parallel the efforts and activities of this organization. The Department has a program called the Urban Parks Program. This is a program where a substantial amount of money, approximately 87 million dollars in capital has been appropriated to five cities in the Province of Alberta. Those cities are Medicine Hat, Lethbridge, Red Deer, Lloydminster and Grande Prairie; as well, those cities are eligible to receive funds of approximately 5% of their capital amount spent for a 30 year period.

As well, there is another grant program that provides funds to park developments of a municipal scope. This is the Municipal Recreation and Tourism Areas (MRTA) Program. This program will provide up to 10 million dollars in capital over a 4 year period, with approximately 50 million dollars in operating funds over a 25 year period. This program is available mainly to communities, municipalities in rural constituencies throughout Alberta.

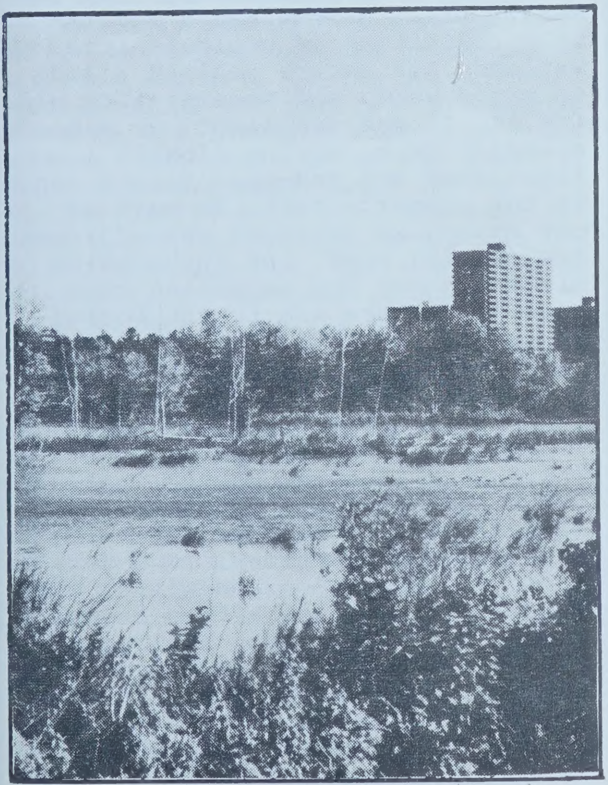
Another program that the Department administers is Capital City Recreation Park Grant. This grant program is in the amount of 2.2 million dollars per year for a 20 year period. This program is provided to offset the operating costs and expenses of Capital City Recreation Park in the City of Edmonton. As well, the Department is committed to another major urban park in the province, and that is Fish Creek Provincial Park, which is located on the southern outskirts of the City of Calgary. As a Calgarian and former user of that particular facility, I must make note that it is one of the nicest facilities that I have had the opportunity to utilize, particularly when in Calgary. I would be remiss if I did not mention that there are a number of other provincial parks and provincial recreation areas that the Department manages and operates throughout the entire province.

A number of other grant programs are also offered through the Department of Recreation and Parks. The Trails Program and the Community Recreation/Cultural Grant (CRCG) Program are offered. These programs, particularly the CRCG Program, involve a substantial amount of funding paid directly to community groups and municipalities throughout the entire province, for the development of open space and urban natural areas as well as other facilities. The CRCG Program awards approximately 48 million dollars per year.

You may be aware as well, of the Recreation, Parks and Wildlife

(RPW) Foundation. This is a Foundation that provides funding for various activities and projects to individuals, agencies, community groups and municipalities throughout the province in the area of open space development, conservation and rehabilitation, and wildlife projects. The RPW Foundation is a Crown Corporation and it, as well as the Alberta Sport Council are under the direction of the Minister of Recreation and Parks, the Honourable Norm Weiss. The Ministry contains three major entities: the Department of Recreation and Parks, the RPW Foundation, and the Alberta Sport Council.

Other services that the department provides are administrative support, in terms of both staff and dollars through the Percy Page Centre; of course, the Federation of Alberta Naturalists is a resident of the Percy Page Centre and is able to access this kind of support. As well, there is support given to various provincial recreation, sport, conservation organizations who are residents of Percy Page Centre, through consulting services for planning and long-range development.



An urban pond in Toronto (Photo: Gerry McKeating).

One of the things that I do want to bring to the attention of this group is the Recreation and Parks Policy Statement, which is currently being developed. It is in the final stages of public input; there are going to be two public meetings, one held two weeks from now here in the City of Calgary on February 7th and a second workshop for public input to that document will be held in the City of Edmonton on February 21st at the Edmonton Inn. I think if you have not, as a group or as individuals here, had input to this particular policy, this is a statement of the direction that the Department will be taking in the next number of years, and I believe that you should take the opportunity to peruse the document and provide input. If any of you are interested in this, please see me after and I would be more than happy to take your name, and give you some information on how you might become involved.

In closing, I would like to reference David Ealey's opening remarks to the Workshop, specifically the objectives of the Workshop: the knowledge and information dissemination, discussion and how to effect resolutions and equally if not most importantly, the strategy of implementation. I would be remiss if I did not indicate that I am quite confident that the Minister would endorse these objectives for this particular workshop. So, as a final note I would like to congratulate David Ealey, and his organization, I want to wish the best of luck to the speakers, resource people and participants and wish you all continued good luck with your individual, group and agency efforts in this area.

Author's Address:
Section Head, Outdoor Recreation Facilities Section, Community Recreation Branch, Alberta Recreation and Parks, 8th Floor, 10405 - Jasper Ave., Edmonton, Alberta, T5J 3N4.

Birds, Bees and the Bedroom Community

Gerald McKeating

The city offers much opportunity for the enjoyment and enhancement of nature. We often tend to think only in terms of the protection of key natural sites, but I wonder if we are missing opportunities by failing to recognize the alternatives available in cities. Such alternatives can help to make cities more ecologically rich and diverse, providing us with opportunity for the enjoyment of nature.

I am not a lover of formal gardens, whether they be at Versailles or take the form of that hideous "landscape" on Jasper Avenue in Edmonton. For that matter, the monotony of many suburban landscapes leaves much to be desired.

Ecological inspiration can be found in back lanes, sewage ponds, railway rights-of-way, vacant lots, and even factory roof tops. There are many secret places in an urban environment that not only provide wildlife habitat but make urban space more interesting and pleasant places to live. A city must have a place for Great Horned Owls, chicory, Snowshoe Hares, Muskrats, woodlands, prairies, Pileated Woodpeckers, and yes, even weeds and untidiness.

The fundamental aspect of environmental health is diversity, natural systems that can occur in the absence of tidy-minded people and their sterile aesthetic doctrine. I would like to argue that we can take a broader environmental view of the city, one that is in tune with urban natural processes and not one that fights to replace those natural urban sites with a continuum of biologically sterile ones. By minimizing order and form, many rich environments can be added to the urban park system at minimum cost, simply by leaving these untidy areas alone.

Traditional landscape values obviously have their place and I would be the last to admit that I did not enjoy the vast tulip beds in Ottawa; but what about our traditional city parks? Many possess grand old trees, and if you stop to look, they possess very precious little else. What else is present to ensure the continuation of that woodland?

There are few city-scapes which have escaped impact by the process of urbanization. But when we look at these drastically altered landscapes, we can still find diverse habitats; ravines, grassland, old aspen forest and prairie sloughs which provide us with our links to our past, to our present, and to our future.

I remember as a graduate student in the mid-70's studying an urban valley site in Metropolitan Toronto. The valley was surrounded by deep, darkest Toronto suburbia - now there is a wilderness - but the valley still maintained a remarkable collection of habitats from wetlands and mature hemlock stands to maple woods and regenerating old fields. It was resilient; it was spendid. Here, spring flowers flourished and Red-eyed Vireos sang in the summer's heat. As part of our study, we surveyed the adjacent residential area. Let there be no mistake about how important that piece of nature was to the community.

This type of area can be found throughout the country as the Calgary Field Naturalist's Society discovered when they undertook their natural areas survey some years ago. Now, the Edmonton Natural History Club is following that lead. David Ealey, in a recent review of natural areas within the Edmonton region identified about a thousand sites of high biological interest of which around 30 were particularly significant. Efforts are clearly needed to ensure that at least some sites are protected. We tend, however, to focus our concern on these important natural sites, and when we have minimum resources or time, that approach is understandable. But urban spaces offer a wide range of sites from naturalized communities of plants and animals to abandoned industrial lands and railway banks which offer various associations of species, often in profusion. Even those sterile urban areas can become colonized.

Basic management concepts for wildlife habitat in cities are the same as anywhere else; diversity of forest type, vegetation cover, forest edge, openings and vegetation layering. All help to provide the essentials of food, shelter, nest sites and foraging areas so essential to the maintenance of wildlife populations.

Many urban "natural" areas, if I can call them that, are saved from loss soley on the basis of cost, especially in these economic times. We can argue that urban landscapes can be enriched with beauty at minimum cost to the taxpayer. It may be a chilling thought but Herbert Sukopp when writing of the soil and vegetation of Berlin's wastelands, stated "ecosystems which have developed in urban conditions may well be the prevailing ecosystem of the future". I suspect that we all love the wide open spaces, but those of us who have had extensive experience living in larger cities know just how fast open space and natural areas can disappear. Toronto, for example, is virtually a continous urban area from Oshawa to Niagra Falls. I believe that in many parts of North America that prospect is very real indeed. If we operate on the premise that these ecological processes within the city are important and perhaps inevitable, then perhaps the "naturalized" communities should be inventoried and evaluated in addition to those natural, undisturbed jewels which concern us all.

Wetlands, as most of us know, contain rich associations of species, but those in urban areas in particular are susceptible to water pollution, dumping or other forms of misuse. As these sites are frequently perceived as breeding grounds for mosquitoes, we must make a greater effort, through education to create a better understanding of their value, role and function, and the recreational opportunities that they provide.

Abandoned industrial sites and vacant lots can support a surprisingly rich wildlife community. Some areas that are closed off to the public can become desirable nature reserves. While in England in 1986, I visited a rather small restricted area within the Port of Liverpool. Surrounded by industry, the container port, and construction rubble, the wetland thrived to such an extent that it had been designated by the local nature trust as a nature reserve. Birds were abundant; the recreation experience, rich.

One of the more famous Canadian industrial sites is the Leslie Street Spit located on Toronto's waterfront. The spit, formed from earth and rubble from Toronto's construction industry, is still an industrial site. Dumping continues, but by accident it created one of the most spectacular wildlife gatherings in Ontario, if not in Canada. Ring-billed Gulls pioneered the site. They now number over 75,000 breeding pairs. Common Terns, Caspian Terns and waterfowl have become established and songbirds take advantage of the vegetation. The spit is an excellent place to observe shorebird migration. It is possibly the most important bird watching area in the Toronto region, and as such it offers many recreational benefits for residents, not only for birdwatchers, but for anyone who visits the spit on a summer weekend. This educational opportunity, recreation facility, and wildlife habitat became available to the residents of the city at no direct cost to them.

Sewage lagoons are rich in nutrients, thereby supporting diverse associations of invertebrates and birds. In a study in the Ottawa Valley, a graduate student colleague of mine, Peter Hamel, clearly demonstrated that sewage lagoons were more important to migrating shorebirds than the

Calgary's Natural Areas

David Elphinstone

Calgary is a city that is blessed with a wide variety of natural habitats near its borders. To the west we find the foothills and mountains, to the south and east - grasslands and badlands, and to the north - aspen parkland. These are combined with the diverse habitats in two main river valleys, and thus Calgary is ideally suited for people to see and partake in a number of wildlife-related activities.

In Calgary a number of natural areas have been put aside for wildlife preservation as well as for education and passive recreation. These are briefly described below:

NOSE HILL PARK on the northern fringe of the city is a grassland plateau cut by coulees. Grassland in the prairie provinces is being lost at a remarkable rate and for this reason the area has been set aside as a park. At present about 625 of 1,039 hectares are owned by the City with the rest designated for future land acquisition. Numerous glacial erratics attest to the interesting history of glaciations that occurred many times in the Calgary area. Archaeological features in this area include campsites and tipi rings, cairns and bison kill-sites. This area is in the news these days due to a proposed bill of the Provincial Government that would force the purchase of the lands within a specified period of time.

EDWORTHY PARK is an area divided into three parts: The formal Edworthy Park, the Douglas Fir Trail, and the provincially owned Lowery Gardens. These areas are located on the south bank of the Bow River in the west end of town. The Douglas Fir Trail is a steep trail that winds its way through one of the most easterly stands of Douglas Fir in Alberta. Some of these trees are over 400 years old. Edworthy Park was also important in the development of Calgary as many of the city's historic buildings were built of sandstone from quarries in the park. Many of the brick buildings in Calgary had their origin in factories located next to Edworthy at Brickburn.

The INGLEWOOD BIRD SANCTUARY is a federally designated sanctuary located along the Bow River in southeast Calgary. The sanctuary is well known for the large number of birds that use the area for either nesting or as a stopover location on migration. Over 266 species have been identified in this riverine forest. The sanctuary has an historic site as its base of operations - the house of Colonel James Walker, who was named "Citizen of the Century" in 1975.

The WEASELHEAD is one of the largest natural areas in Calgary and is located on the west end of the Glenmore Reservoir. The main part of the park is a growing delta and is an excellent area for seeing the change in vegetation associated with such a location. The area is named after an Indian who resided in the area at the turn of the century. Sam Livingston, after whom the fish hatchery was named, ranched the area now covered by the reservoir.

FISH CREEK PROVINCIAL PARK, spanning the city on the south side, has a multitude of habitats for one to visit - grassland, riverine forest, aspen poplar and white spruce forest. The park is rich in archaeological sites and pioneer history. Fish Creek Provincial Park is the only site in the city to have a Great Blue Heron colony. The province is also trying to reintroduce Prairie Falcons into the central part of the park.

SANDY BEACH NATURAL AREA extends along the Elbow River from Riverdale Avenue to Glenmore Dam. This area has forests of white

Bald Eagles regularly overwinter in southeast Calgary and feed upon winter resident Mallards found on the Bow River in thousands (Top Photo: Ellen Gasser; Bottom Photo: David Elphinstone).

spruce, aspen and balsam poplar and is an excellent area for walks along the Elbow River.

An area yet to be developed as a park is the proposed DOUGLAS FIR PRESERVE next to Bowness Park. This location has many Douglas fir trees near the top of the escarpment as well as other rare plants for the Calgary area.

BOWMONT NATURAL AREA in the northwest end of the city is an elongated park along the Bow River. This area is an interesting riverine forest-grassland mix with a unique feature in "Waterfall Valley". As the visitor reaches the bottom of this valley, springs start to appear on the valley slopes. At this location new rock called "tufa" forms. These calcium carbonate deposits have become quite large. The observant visitor can see some of the ferns that grow in this wet environment.

BEAVERDAM FLATS and CARBURN PARK are parks in southeast Calgary where some of the most attractive features occur during the winter. These locations along the Bow River can have the highest number of overwintering Bald Eagles for southern Alberta. The eagles feed on the thousands of Mallards that stay along the Bow. These two natural areas are examples where high disturbance has taken place.

Calgary's natural areas are connected by environmental reserves that run up and down the river systems. These attached green spaces act as wildlife corridors between the parks and provide excellent chances to view many species that inhabit or visit the area.

History

INGLEWOOD BIRD SANCTUARY was the first natural area to be studied in detail by the Calgary Field Naturalist Society (CFNS). In 1970, partially because of the information gathered, the City of Calgary purchased the sanctuary. In 1972, the CFNS formed a Natural Areas Committee to produce a document on five of Calgary's natural areas. These were: Edworthy Park, Fish Creek, Glenmore Park, Nose Hill and Pierce Estate. The information from this report led to the purchase of part of Nose Hill by the City of Calgary, and Fish Creek by the Provincial Government of Alberta.

In 1975, Calgary's Natural Areas - A Popular Guide was published by the CFNS. This book proved to be extremely popular and gave the general public an introduction to our Natural Areas. In 1980, Calgary's Natural Areas was published in which most of the areas were covered with detailed species accounts.

A city naturalist was hired to operate the Inglewood Bird Sanctuary and the corresponding programs in 1972. In 1980, another full time naturalist was hired and his present duties include programming outside the Bird Sanctuary, biophysical monitoring, the ranger program and park planning. Both positions liaise with organizations and with the media. Programs presently include guided walks and natural history courses which are offered to help the public understand what rich resources occurs in the city. Some of the guided nature walks are co-sponsored with the Calgary Field Naturalist's Society. The natural history courses at the sanctuary include bird identification, plant identification, general natural history, and nature photography. Fort Calgary, in cooperation with the Outdoor/Nature Section, offers courses in Enhancing Your Yard for Wildlife, Natural History Hiking, Geomorphology and Archaeology. Fort Calgary also plays host to monthly lectures on many natural history subjects.

FISH CREEK PROVINCIAL PARK offers a number of programs to the urban public as well. These are situated in the park and include lectures, walks and audio-visual programs. The Shannon Terrace Environmental Education Centre is open for school classes to explore the workings of nature.

CONCERNS

The biggest problems affecting Calgary's Natural Areas include public overuse, lack of appropriate maintenance, lack of funding, and the lack of an overall mandate to adapt to the special needs of these parks. Smaller issues, but certainly important ones include land acquisition and park classification. However, with the new user surveys the City of Calgary has conducted, recognition has been given in the Parks/Recreation Policy & System Plan (due in 1987) to the importance of these vital areas. Presently the Department is attempting to form a future organization to handle management of all Calgary's Natural Areas. It is hoped that each of these concerns will be addressed and new emphasis be put in place regarding these areas.

Author's Address:
City of Calgary, Parks and Recreation Dept.,
Box 2100, Postal Station M, Calgary, Alberta,
T2P 2M5.

Let's Get Personal

Rob Gardner

Anyone who has looked across the Vermilion Lakes to Mount Rundle would agree that Banff's Rocky Mountains are a landscape of national significance. The Milk River Valley with its Indian carvings and weird rock formations, is an area of provincial significance. The creation of Writing-On-Stone Provincial Park ensures the preservation of these natural features.

Police Point Park in Medicine Hat, protects an area of personal significance. This river-bottom woodland, although not spectacular compared to the Rockies, may play a greater role in preserving Canada's natural environment. This natural area, like many others in Alberta's cities, introduces our citizens to the natural environment.

To emphasize this point, I would like to reminisce about my childhood in Lethbridge. I remember clouds of Yellow-headed Blackbirds flying toward a nearby marsh. Not knowing much about the outdoors, I thought that they were rare. Now they are, because that slough was filled in to become a school yard. In the few years that I played there, the frogs and blackbirds made a big impression. Children now growing up in that neighbourhood will not have that experience.

During the 1970's, politicians in Alberta's rapidly growing cities realized this deficiency. They realized that national and provincial parks, while providing an important preservation function, are quite elitist in the services they provide.

Let's take a closer look at the costs involved in going camping. Although the charges are greatly subsidized, just the location of major parks remains a major obstacle. A private vehicle is required, and both parents must have the same two consecutive days off work. At least $500 of specialized equipment is needed. Of course, the cost of gas, campsite and admission to the attractions add up to a significant expenditure.

Not surprisingly, many people were unwilling to take this leap from urban security to the unknown wilderness. Some sort of transition was needed to bridge this gap. Fish Creek Provincial Park in southern Calgary provided this. It's attractions include those of typical provincial parks - sandy beach, trails through natural woodland, unusual wildlife. Unlike other parks, though, access was extremely easy, by walking, cycling or driving and even by bus. The public responded quickly and enthusiastically. Finally, all Calgarians had equal access to recreation in a natural setting.

Of course, developing Fish Creek and Edmonton's Capital City Park system cost enormous amounts of money. Much of the land had to be purchased from real estate developers. The Heritage Fund proved invaluable in acquiring the parks, and making this entire program possible.

Officials in Alberta's smaller cities saw the potential for upgrading their more traditional park systems. Some citizen's groups had been pressing for the preservation of natural areas but, until this time, had no prototype to demonstrate what they wanted. The Province responded to this grassroots pressure with a grant of $86 million to five cities - Medicine Hat, Lethbridge, Red Deer, Grande Prairie and Lloydminster. The Urban Parks Program, including Fish Creek and Capital City parks, is by far the most popular Heritage Fund project to date.

So that explains how Alberta came to have such a good system of urban natural areas, but something unique has happened during their development. Because these areas were so personal, many people took part in the planning process. This caused problems sometimes, because the public invariably wanted bigger, wilder parks. In most cases, though, the politicians listened. Citizens now think of these areas as "their own".

Involvement has carried over into the operation of the natural areas. Visitors are quick to point out any lowering of standards, but are just as quick to lend a hand. In Medicine Hat, the main goal of the Interpretive Program is to increase participation in ~~the~~ outdoors. Each person can contribute and, in doing so, helps both himself and the overall program.

Traditional interpretive programs in national parks tend to be much like school. The interpreter, who knows the area, talks to the audience, which does not know the area. In an urban setting, however, the audience does know quite a bit. The interpreter finds out what the person's level of understanding is, then fills the gaps in the person's knowledge.

Rare plants, such as this Douglas Fir in Calgary, are often located in urban natual areas; unfortunately few are yet protected (Photo: David Elphinstone).

Often, visitors are very familiar with a particular subject, especially local history. In this case, the interpreter tries to learn as much as possible, then pass it on to other visitors. Another example of this involves animal sightings. If one person reports seeing a particular bird or animal, other visitors that day are directed to the location.

In this way each citizen becomes involved. For some, this means a brief stroll. Others may donate photographs or artifacts. A few will have the skill and time to help present interpretive programs. Hopefully, each will receive the encouragement to increase their level of participation.

Urban natural areas also lend themselves to recreation. Canoeing, orienteering, jogging and cross-country skiing all fit in perfectly with our park system. This interaction with the environment becomes a natural part of life. It is not something that happens only "in the mountains" or "on holidays".

Interpreters work closely with Outdoor Recreation instructors to ensure the lessons include environmental awareness. For example, the interpreter may attend the last canoe lesson to point out some of the aquatic animals in the river.

In summary, it should be stressed that urban natural areas are an integral part of Alberta's recreation system. Here, close to home and in familiar surroundings, a positive attitude to the outdoors can easily by fostered. This will soon be reflected in support for larger, more distant preserves. But more importantly, our everyday lives will become healthier and happier.

Author's Address:
Interpretive Programmer, City of Medicine Hat, 580 - 1st Street S.E., Medicine Hat, Alberta, T1A 8E6.

Natural Areas and The Nature Centre in Red Deer

Jim Robertson

In the two years that I have lived in Red Deer, I have been struck repeatedly by the amount and diversity of wildlife and natural areas in and around the city. After getting nothing but magpies, Gray Jays and chickadees at my bird feeder in Lake Louise, it was a pleasant shock to have a couple dozen types of birds in the backyard of my new home. The bird count on last December 27th turned up 44 species in the Red Deer count circle! I live on the edge of the Gaetz Lakes Sanctuary, which has 128 types of birds and 28 species of mammals.

This diversity and abundance of wildlife can only come from a diversity of habitats. Red Deer is officially in the aspen parkland, although there is precious little of that left. In reality, of course, it is in the midst of farmland. Red Deer is close to the dry grasslands of the southeast, and is also close to the boreal forest, which begins slightly west of town. An "edge", where habitats overlap, always has more diversity of life than a homogeneous single habitat. Depending on the landform and its aspect, one can find in Red Deer examples of all three of these life zones.

Within the City of Red Deer, much of this natural habitat is protected as parkland. An extensive nature interpretation program has been started to help the public better understand, appreciate, and enjoy their environment in a non-consumptive manner.

Red Deer was first settled just over a century ago, but the City remained small until relatively recently. As late as the 1950s, it only had a population of about 8,000. Today, over 55,000 people call it home. A recent edition of our local newspaper reported that Red Deer is the fastest growing city in the province! While rapid growth usually has both social and environmental disadvantages, our traditional small size and only recent "boom" has been something of a blessing. Our river valley and ravines have not been completely lost to urbanization. The flood plains were less suitable for development. People tended to leave them alone or use them only for gravel mining and landfill sites, instead of for industry and housing.

Over the decades, various schemes were proposed which would have destroyed parts of the river valley -- logging, high-density housing, highways, even amusement parks -- but strong lobbying efforts by the local naturalist club and many other concerned citizens minimized the damages.

The Red Deer Regional Planning Commission prepared a "River Valley Concept" plan in 1974. It was approved in principle by City and County councils, but not implemented due to a lack of funds.

In 1975, PARD Associates did environmental, geological, and hydrological studies of the Gaetz Lakes Sanctuary area. Their study brought to the fore the true value of the river valley in its natural state.

The Government of Alberta announced the Urban Park Program in June 1981 for the cities of Red Deer, Medicine Hat, Lethbridge, Grand Prairie, and Lloydminster. The Planning Commission prepared a Master Plan for Red Deer to use the 29 million Heritage Savings Trust Fund dollars we had been allotted.

There was a big public participation phase in Red Deer, before the final recommendations were made in the Master Plan. Results of mailback survey questionnaires showed overwhelming support for the retention of natural areas. Question: "Which facilities would you use and enjoy the most?"

The greatest support was for

"animal and wildlife preservation areas" (73.2%). There was also very strong support for the establishment of a "nature interpretation centre" (49.7%).

The Master Plan was completed and unanimously approved by City and County councils in April 1982, and the work has been ongoing since then.

Waskasoo Park is now virtually complete. It stretches over 12 km of river valley, 40+ km of trail, and 1,000 hectares of parkland, from city limits north to south and east to west. It offers a variety of land uses from intensive recreation (baseball, BMX track) to mixed preservation and recreation to almost pure protection in the Sanctuary.

The lands comprising the Gaetz Lakes Sanctuary were acquired partially by expropriation, partially from the school district and mostly bought from the Crown for $1.00. It was transferred from the Crown on the condition that it be used primarily for the protection of wildlife in its natural habitat. No activity is permitted that conflicts with this objective. No vehicles, skiing, boating, camping, picnicking, horses, pets, collecting and picking, etc. are permitted.

The Kerry Wood Nature Centre was built to provide nature education and awareness as a means of protection. In addition, staff do biological monitoring and control access and use of the Sanctuary and other natural areas in the park.

There are various municipal bylaws to enforce environmental standards throughout the park. In addition, the Gaetz Lakes Sanctuary Committee monitors the Sanctuary for the City and Province to ensure compliance there.

(At this point the speaker presented an audio-visual tour of the park, down the river valley from Ft. Normandeau to Heritage Ranch, to Maskepetoon Park, to Bower Ponds/Great West Adventure Park, to the north and south escarpment, riverbank and ravine trails, to the campground, Nature Centre and Sanctuary, to McKenzie Trail, Three Mile Bend, and Riverbend.)

The Kerry Wood Nature Centre was named after Red Deer naturalist, author, and environmental educator E.A. "Kerry" Wood.

The building sits at the edge of the Gaetz Lakes Sanctuary, and is the headquarters for the Park's natural history interpretation programs. There are extensive permanent natural history exhibits, temporary (travelling) displays, a "Discovery Room" for children, a theatre and meeting facilities.

We offer school and youth group programs, and regular and special public events. As previously mentioned, we monitor and try to control use of the Sanctuary. We run an interpretive signage program throughout the Park, with both permanent and seasonally changeable interpretive signage.

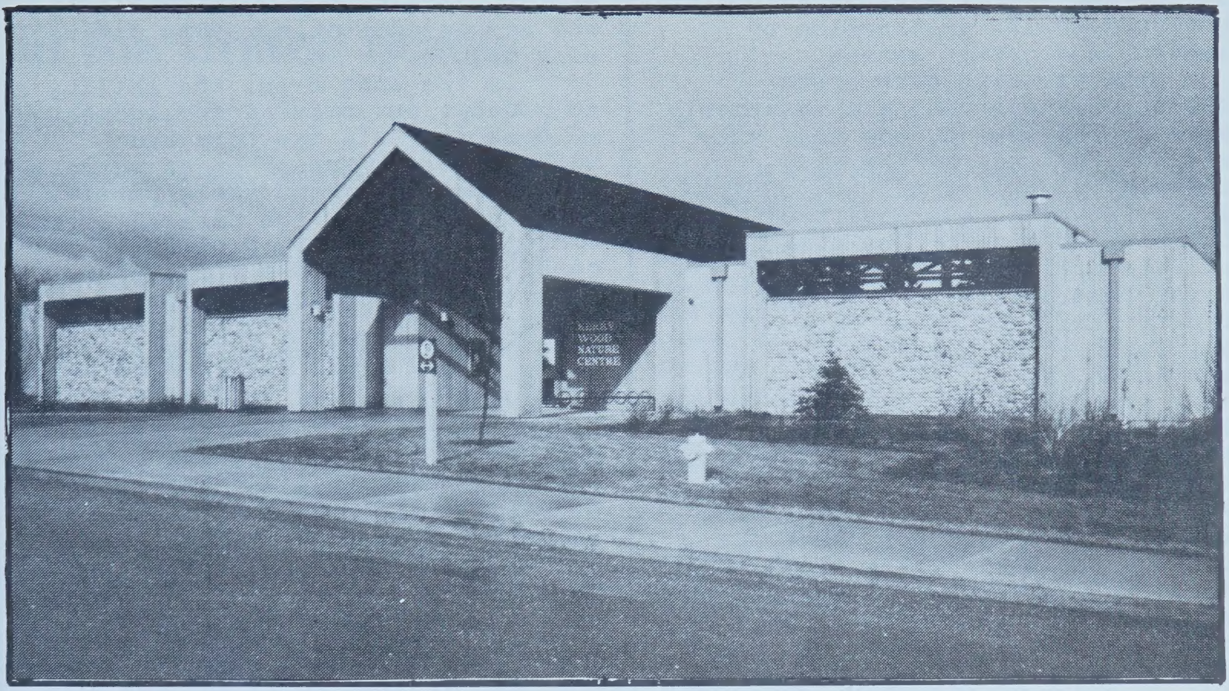
There is a permanent staff of only two people. We have funding for four summer seasonal staff, and with the help of various grants and private donations, we have managed to employ one or two of the seasonals for most of the last year.

We have a very dedicated volunteer corps, which helps with everything from programs to typing, and a cooperating association which operates our bookshop and will help with our extension program when they begin publishing books and brochures.

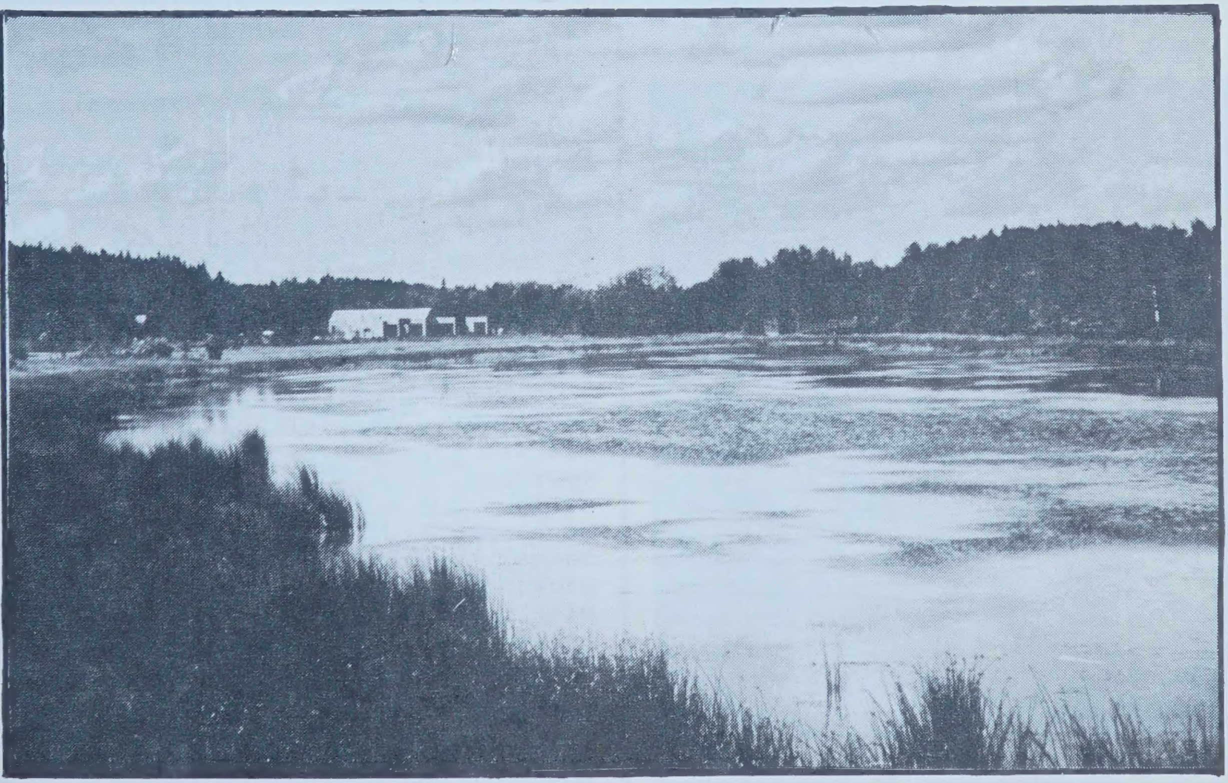
Support from the people of Red Deer has been most gratifying. We have only been officially open since August, and the doors to our initially empty building opened in April. In just eight months of partial operation, over 36,000 people have used the Nature Centre facilities and services.

The natural areas and nature programs in Red Deer have a mixed future. The unique tamarack swamp environment of Maskepetoon Park will be destroyed when the planned railway line runs through the middle of it.

There are still several natural areas to be acquired to both complete the park trail system and to protect valuable habitats and wildlife migration corridors. The



The Kerry Wood Nature Centre honours a long-time Red Deer naturalist and an Honorary Member of the Federation of Alberta Naturalists (Photo: Myrna Pearman).



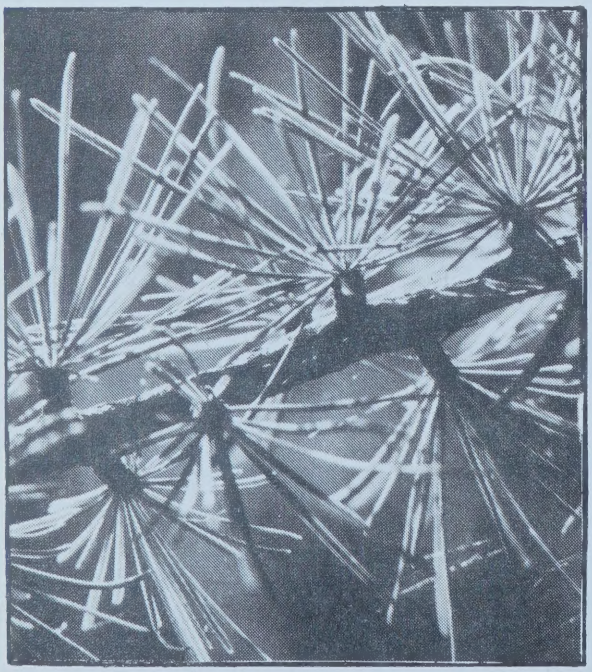
Gaetz Lakes Sanctuary provides a special setting for natural history enthusiasts in Red Deer (Photo: Peter Marryat).

Spruce Woods, for example, are threatened with destruction by logging and gravel mining.

The existing park areas (except Maskepetoon) are relatively safe at the moment, now that they are in the hands of the City, instead of various private individuals. However, everyone must continue to monitor the parklands - private citizens, the Red Deer River Naturalists, the Nature Centre staff and other park employees - to ensure their continued safety.

The Canadian Wildlife Service wants to remove the Federal Migratory Bird Sanctuary status from the Gaetz Lakes, to "save money", we were told. To the best of my knowledge, the CWS has not spent one cent on the Gaetz Lakes since 1924. While this action would not change anything immediately (if indeed it occurs at all), it will be a moral loss.

Red Deer was one of the few cities in Alberta NOT to spray for mosquitoes. After the damp summer last year, there was great pressure to spray. This threat has been at least temporarily removed because of the Province's budget-cutting and admission that spraying did not work anyway.



A Tamarack from Maskepetoon Park is under threat of railway development (Photo: Cleve Wershler)

In the long term, the ability to protect our natural environment -- both in one's own city and world-wide -- depends on an educated, sympathetic, and aware public.

In Red Deer, the natural history interpretive program is generally well-funded and supported. There is substantial pressure to replace the most labour-intensive programs and do more with volunteers.

More seriously, Provincial budget cuts have caused the Red Deer Public School District to cut all bus-outing funding, and the District's entire outdoor education program has been eliminated. Let us all hope that kids are not going to be forced to revert to the mind-set of the 1950s, when nobody could even spell "ecology", let alone understand what it meant.

Provincial park interpreter programs are being decimated by Alberta Recreation and Parks. It is getting harder for people to find out the information they need to appreciate and enjoy natural areas in a non-destructive manner.

When capital money was available, there was a lot of spending on parks and nature interpretation and preservation. Now, when the money is tight, parks and environment are seen as "frills". Yet look at the recent Alberta Breaks magazine: it features the Tyrrell Museum and the Provincial Park in Sylvan Lake, and all the urban parks.

Forty-eight percent of Kerry Wood Nature Centre's casual visitors are from out of town; they are tourists. This is a big source of revenue for a small city like Red Deer, and studies have shown this to be the case throughout the province. Impress on your government representatives that "nature", as well as tar sand plants, can generate significant revenue.

Author's Address:
Waskasoo Park Naturalist, Kerry Wood Nature Centre, #1, 6300 - 45th Avenue, Red Deer, Alberta, T4N 3M4.

The Development of Urban Wildlife Programs in the United States

Daniel L. Leedy and Lowell W. Adams

Introduction

The United States and Canada have many things in common in addition to an international border. You are celebrating the Canadian Wildlife Centennial. Establishment of Last Mountain Lake refuge in Saskatchewan coincided rather closely with the beginnings of federal scientific research and management programs dealing with fish and wildlife in the United States. Our first National Park, Yellowstone, was established in 1872; and the Pelican Island federal bird reservation near Sebastian, Florida, established in 1903, was the first unit in the current extensive National Wildlife Refuge System of the U.S. Fish and Wildlife Service. Canada and the United States share responsibilities in protecting and managing the continental migratory waterfowl resource. In the past 100 years, both countries have experienced rapid human population growth, with a majority of the people now living in towns, villages, cities and suburbs. With increased urbanization, industrialization, and marked changes in agricultural (e.g. drainage of wetlands) and other land uses, have come changes in the fauna and flora, and in peoples' knowledge of, and attitudes toward, fish and wildlife and the remaining natural habitat.

These changes have come rapidly. However, fish and wildlife agencies have come more slowly to the realization that urban citizens, regardless of whether they hunt or fish, need and enjoy wildlife close to where they live, and are an important part of their clientele. Traditionally, and because fish and wildlife agencies have been largely dependent on license fees paid by sport fishing anglers and hunters and (in the United States) surcharges on sport fishing and hunting equipment, etc. funneled back to the states, these agencies have focused much of their attention on game fish and on wildlife species that are hunted. Currently, more attention is being given to nongame and urban wildlife by the states, especially, and by various private, non-profit conservation organizations, professional societies, universities, municipal governments, and local citizen groups.

Interest in doing something to preserve and manage natural areas and enhance urban wildlife conservation in the face of urbanization is growing. In this paper, we shall review some of the historical developments in urban wildlife conservation in the United States (see also Leedy and Adams 1986), and describe some of the programs to preserve and manage "natural" sites in urban and urbanizing areas. We shall attempt to outline some of the roles of selected U.S. (federal) and state agencies in urban wildlife conservation, as well as the roles of private conservation agencies, universities, industry, professional societies, municipal governments, and local citizen groups and to point out opportunities for cooperation and exchange of information among different disciplines and interests.

Urban Wildlife Conservation In The United States: Overview and Historical Perspective

Although establishment of parks and refuges was recognized as a means of protecting wildlife and wildlife habitat a century ago, the art or science of managing wildlife on a scientific basis dates only from the early 1930s when the emphasis was on game species. However, Leopold (1929), stated that [management] actions necessary to produce a crop of game are in large part those which also conserve other valuable forms of wildlife and, the next year, in introducing the American Game Policy to the American Game Association (Leopold 1930), suggested that sportsmen are not the only group concerned with game conservation. He stated, furthermore, that cessation of hunting might be considered as a last resort as a means of perpetuating game, then in relatively short supply, and that "the opportunity to see and study game is just as valuable as the opportunity to shoot it, and half a loaf is better than none." Aldo Leopold was a hunter, but he appreciated many aspects of nature in addition to game, including songbirds in town and villages. In his classic book Game Management, he stated, "A pair of wood thrushes is more valuable to a village than a Saturday evening band concert, and costs less" (Leopold 1933, p.404). Though some research on wildlife, particularly birds, was conducted in urban areas, e.g., work by Margaret Morse Nice (1937, 1943) on Song Sparrows in Columbus, Ohio, it was not done with the idea of adding to urban wildlife literature for use in planning and management.

It was about this time, however, that professionalism got underway and the concept of wildlife broadened. The Society of Wildlife Specialists, progenitor of The Wildlife Society (TWS), was created in 1936 followed the next year by the formation of TWS. A Statement of Policy was published in the first issue of The Journal of Wildlife Management. This policy indicated that wildlife management is not restricted to game management, but "it embraces the practical ecology of all vertebrates and their plant and animal associates. While emphasis may often be placed on species of special economic importance, wildlife management along sound biological lines is also part of the greater movement for the conservation of our entire native fauna and flora" (Bennitt et al. 1937).

Rudolph Bennitt, first President, TWS, and a principal author of that Statement, regularly attended the North American Wildlife Conferences (now called the North American Wildlife and Natural Resources Conferences). As summarizer of the 11th conference, he stated, "... I still look forward to the day when we shall hear men discuss the management of songbirds, wildflowers and the biota of a city..." (Bennitt 1946). Many years passed before this was to happen, but beginning in 1967 (e.g., Davey 1967, Stearns 1967, and Twiss 1967) and subsequently, considerable attention has been given to urban and nongame wildlife at these conferences.

There was a surge of public interest in the 1960s and 1970s with respect to natural resources conservation. This resulted in the enactment of many environmental laws including the Land and Water Conservation Fund authorized in 1965, Endangered Species Act of 1966 (with subsequent amendments), the National Environmental Policy Act of 1969, the Federal Water Pollution Control Act of 1972 (also amended), the Clean Air Act, and others. These laws, generally accompanied by similar legislation at the state level, have had considerable impact on urban developments. The Land and Water Conservation Act made funds available for the acquisition of many areas currently of great value to conservation, both in rural and in urban areas. Thoughtful university professors helped with the impetus. For example, without intending to denigrate the importance of rural- and wilderness-area wildlife research and management related to game species, we are sure, Dasmann (1966) urged that the wildlife profession become more involved with wildlife and environmental quality in urban areas. He stated that more wildlifers should "... get out of the woods and into the cities. They must work with city and metropolitan regional planners, with landscape architects and all others concerned with the urban environment to make the cities and metropolitan regions, the places where people live, into environments where each person's everyday life will be enriched to the maximum extent possible by contact with living things and natural beauty."

In 1968, the U.S. Department of the Interior, Bureau of Sport Fisheries and Wildlife (now Fish and Wildlife Service), sponsored a symposium in Washington, D.C. entitled "Man and Nature in the City." John S. Gottschalk, then Bureau Director, stated in his opening remarks at the symposium, "If our Bureau were to focus, as we have in the past, on the wide open spaces and neglect the people in the city, I believe it would soon find itself in a very questionable orientation with society" (Gottschalk 1968). This symposium was followed by other urban wildlife-related conferences and symposia sponsored by various organizations (Noyes and Progulske 1974, Euler et al. 1975, Kirkpatrick 1978, Shaw 1986, Adams and Leedy 1986).

From a professional and technical standpoint, the field of urban wildlife conservation is still in its infancy, but considerable progress has been made. Though the previously mentioned American Game Policy adapted in 1930 is still pertinent, a new North American Wildlife Policy (Allen 1973) gives greater attention to the importance of wildlife and natural habitats in urban areas. After many years of effort, the Fish and Wildlife Conservation Act of 1980, Public Law 96-366, also known as the Forsythe-Chafee Act, was passed. This act authorized the federal government to provide financial and technical assistance to the states to plan and implement programs for fish and wildlife, especially nongame species. The act is sufficiently broad to include urban wildlife which, we believe, embraces both game and nongame species, vertebrates and invertebrates, and abundant and threatened or endangered species that live in urban and suburban areas. The act has given some impetus to the development of nongame and urban wildlife conservation programs in the United States but, to date, federal funds for implementing the program have not been appropriated. Meanwhile, the states and other entities have continued their efforts to promote such programs. The roles of these various conservation sectors or entities are briefly outlined, with case examples as appropriate, in the following section of this paper.

Examples Of Various Actors, Their Activities And Accomplishments In Urban Wildlife Conservation

Professional Societies

Many of the leaders in the urban wildlife conservation movement are members of professional societies where they are dedicated to professionalism and excellence in biology, ecology, forestry, landscape architecture, or some other field. Though few of these societies have special committees dealing with urban fish and wildlife, the meetings they organize and conduct and their respective publications often do relate to urban wildlife conservation.

The Wildlife Society has had a committee actively dealing with urban wildlife for more than 10 years. A Position Statement of the Wildlife Society on Urban Wildlife prepared by this committee was adopted by the Society Council October 1983, and was published (TWS 1983). This statement, widely distributed, suggested that the studying, planning for, and managing of urban wildlife and related resources represent a logical and needed expansion of traditional professional wildlife concerns. The collaboration of federal and state resources agencies, private conservation agencies, colleges and universities, and well informed individuals in these efforts was encouraged. More recently, TWS' Urban Wildlife

Committee has conducted and reported on a survey of federal and state agencies to determine the status of their urban wildlife programs (Lyons and Leedy 1984); conducted another survey to determine the status of urban wildlife programs in colleges and universities; and has prepared proposed guidelines and composite position description of an urban wildlife employee for use of states in developing urban wildlife programs. The latter two reports, pending publication, are available from The Wildlife Society, 5410 Grosvenor Lane, Bethesda, MD 20814 (phone 301-897-9770). TWS also has cooperated with, or helped sponsor, several symposia related to urban wildlife, e.g., (Dumke et al. 1981, Svedarsky and Crawford 1982, Allen 1984, and Adams and Leedy 1986). In addition, TWS has collaborated in recent years with the National Institute for Urban Wildlife (NIUW) in holding open exchange sessions on urban wildlife conservation in conjunction with the annual North American Wildlife and Natural Resources Conferences.

Other professional societies, though perhaps not as deeply involved in urban wildlife planning and management as TWS, have contributed, also. A major contribution of the American Fisheries Society was its organizational role and sponsorship of the Urban Fishing Symposium held in Grand Rapids, Michigan, 5-8 October 1983 (Allen 1984). The Ecological Society of America and the Institute of Ecology have helped to promote a better understanding of the urban ecosystem -- see for example, Stearns and Montag (1974) -- and hosted a symposium on urban ecology at Syracuse University in August 1986. The Society of American Foresters also has an interest in urban wildlife.

At the recent national symposium on urban wildlife (Adams and Leedy 1986), John L. Wacker, President, American Society of Landscape Architects was a speaker at the opening session. He questioned whether wildlife biologists have sufficiently demonstrated to decision makers wildlife values. He indicated that young people, especially, need to be educated about nature and that his society is in the education business. He also stated that, although landscape architects are committed to work for wildlife and people and they deal with ecology, landscape architects need a policy on wildlife and are willing to work with wildlifers to develop such a policy. This is a challenge wildlife biologists should accept. At this same symposium, Melvin R. Levin, President, American Institute of Certified Planners, pointed out that planners are more or less straitjacketed on account of the market, that urban open space is worth money, and planners are trying to make something out of it. As did Wacker, Levin asserted that when the value of proceeding with development in a certain way can be adequately demonstrated, it is likely that planners, engineers, and developers can get the job done. He emphasized that to have urban open space, you must have control over it. He suggested that zoning is one means of land use control and that planners can be taught that skating ponds in an urban area can also be designed to serve as fishing ponds. Reference is made to these remarks to indicate that professional landscape architect and planning societies are indeed interested in considering wildlife values in urban developments.

Private Conservation Organizations

Mention has been made of the North American Wildlife and Natural Resources Conferences. These important conferences are sponsored by the Wildlife Management Institute (WMI), Washington, D.C. The conference proceedings also are published by that Institute and WMI is influential in many other ways, including working with the U.S. Congress on legislative matters related to wildlife and other natural resources.

The National Wildlife Federation (NWF), organized in 1936, has the largest membership of any non-profit private conservation organization. Much of its work is dedicated to conservation education and it publishes, among other things, National Wildlife, International Wildlife, Ranger Rick Magazine and the annual Conservation Directory, a valuable compendium of organizations, agencies, and officials concerned with natural resource use and management. The latter publication is available from NWF, 1412 16th St., N.W., Washington, D.C. 20036. NWF's Backyard Wildlife Program has attracted public attention to the needs of urban wildlife and has suggested ways of managing wildlife in the backyards of residents (Davis 1974, Tufts 1986).

The National Audubon Society (NAS), another large conservation organization, promotes education and research and through its action programs, preserves wildlife and important natural areas. Among the 80 or so Audubon Sanctuaries --not including those owned and independently operated by Audubon chapters -- are many in or near urban areas. Most of these were donated to the NAS by someone who wanted them saved from housing development or in some cases, perhaps, because of real estate taxes. The Society protects special rare habitats by buying, leasing, or volunteering to patrol selected areas (NAS undated). Some examples of sanctuaries in or near developed areas include:

1. Dauphin Island Sanctuary -- located in the residential section of Dauphin Island, Alabama, west of the mouth of Mobil Bay. This area is leased.

2. Schlitz Audubon Center --75 hectares fronting on Lake Michigan on the northern outskirts of Milwaukee. The largest area of undeveloped land in the Milwaukee region.

3. Audubon Center in Greenwich and Fairchild Wildflower Garden -- 194 hectares of woods, open fields, ponds, streams, and marshlands. A NAS nature center and, during the summer months, an adult ecology camp. Located in a wealthy residential area of Greenwich, Connecticut (John M. Anderson, V.P./Director NAS Sanctuary Dept., pers. comm.).

4. Starr Ranch Audubon Sanctuary --About 1600 hectares in the Santa Ana Mountains, south of Los Angeles, at the end ot State Route 19. A limited visitation area, Anderson (see above) stated: "Ten years ago, this was out in the boondocks. Today a 4-lane highway has brought condominiums right to the gate. We work with developers of adjacent lands to keep envrionmental degradation to a minimum."

5. Tampa Bay -- A number of small islands totaling about 80 hectares, in Greater Tampa and Sarasota bays. Mangrove and spoil-bank islands. Nesting areas for Brown Pelicans and large colonies of herons, egrets, ibises, and terns. According to Anderson (see above), the resident NAS manager serves on the Harbor and Terminal Advisory Board and manages some spoil islands created by the Corps of Engineers, as well as some "natural islands."

The Nature Conservancy, Arlington, Virginia, is committed to preserving biological diversity by protecting natural lands. The Conservancy cooperates with educational institutions and with public and private conservation organizations, and works with states through "natural heritage programs" to identify ecologically significant natural areas. It manages a system of over 800 nature sanctuaries nationwide, some of which are in or near urban areas. Most of the areas acquired by the Nature Conservancy are via private financing or gifts. The Conservancy also designs strategies for legal protection of natural areas, provides low-interest loans for the acquisition of natural areas to its member chapters and other conservation organizations, and undertakes advance acquisition projects for resale to government agencies (Nature Conservancy 1975).

The Natural Areas Association, Rockford, Illinois, also engages in natural area identification, preservation, protection, management, and research. It publishes the Natural Areas Journal. Defenders of Wildlife, Washington, D.C. is involved in education programs dealing in part with urban wildlife and related resources.

The Urban Wildlife Research Center, now the National Institute for Urban Wildlife, Columbia, Maryland, was established in 1973. Insofar as we know, it remains the only private, non-profit conservation organization dedicated to research, planning, management, and education projects pertaining to wildlife and related resources, with a primary focus on urban, suburban, and other developed areas. Though funding has been limited, this Institute has published several pertinent reports, issues a newsletter (Urban Wildlife News), organizes information exchange sessions at the annual North American Wildlife and Natural Resources Conference, and serves, to a growing extent, as a depository and clearing house for information in the urban wildlife conservation area. Many of the papers presented at the 4-7 November 1986 symposium (Adams and Leedy 1986), organized by NIUW, were directly related to the thrust of this Calgary Workshop. Published proceedings are expected to be available in 1987.

Federal Agencies

A survey conducted by TWS' Urban Wildlife Committee in 1983 revealed that federal agencies in the United States had no substantial urban wildlife programs identified as such. As of that date, the Fish and Wildlife Service (FWS) urban wildlife budget was reported to be $70,000, chiefly for research on birds; the National Park Service's budget in fiscal year 1983 was approximately $200,000, 75% of which was for management, 20% for extension, and 5% for research. The U.S. Forest Service noted, in response to the survey questionnaire, that it played a limited role in urban wildlife assistance through the Service's State and Private Forestry Program, but urban wildlife research in which USFS had been active at the Amherst, Massachusetts research unit in the mid-1970s had been eliminated. Other federal agencies, if they responded, indicated that they had no urban wildlife program as such (Lyons and Leedy 1984).

At the opening session of the 4-7 November 1986 urban wildlife symposium, Frank Dunkle, then Director, FWS, recognized the importance of nongame and urban wildlife. He stated that one of the Service's primary functions is to serve as facilitator and catalyst for other agencies at all levels --scientists, conservation organizations, industry, and the interested public. He expresed the need for better national guidance and coordination and envisioned specialized staff to serve in a cooperative advisory capacity for such organizations and individuals.

The lack or scarcity of programs designated as urban wildlife programs, does not mean that federal agencies do not contribute substantially to urban wildlife conservation. For example, the FWS, in addition to conducting research on effects on wildlife of pesticides and other contaminants, many of which stem from developed areas, has several of its wildlife refuges in or close to urban areas. The Tinicum National Environmental Center (NEC) in Philadelphia is now managed as a refuge by FWS. Some 59 hectares of marsh, the nucleus of the present refuge of over 485 hectares, was donated by the Gulf Oil Company to the City of Philadelphia in the 1950s. But, according to Riley and Riley (1979), urban financial problems and development changes threatened its continuation as a city-owned refuge until citizens' groups came to its support and a transfer to the FWS was arranged. The transfer, i.e., the establishment of NEC, was authorized by Public Law 92-326 on June 30, 1972.

The Tinicum Marsh is habitat for a variety of wildlife. Over 280 bird species have been seen at Tinicum NEC and it is the only Pennsylvania location of the eastern mud turtle and one of three places in the state where the large Red-bellied Turtle is found --both of these species are on the state endangered species list. The marsh is especially important because urbanization, agricultural diking, and dredging along the Delaware River have eliminated thousands of hectares of former tidelands in this area. Upland forest and grasslands also are found on the refuge. Major public facilities include a small visitor contact station and interpretive boardwalk trails for wildlife observation. The refuge or center provides high quality programs in environmental education and wildlife-oriented recreation. The NEC provides an opportunity for tens of thousands of Philadelphia residents and others to see and enjoy wildlife. Many Philadelphia residents have volunteered their assistance in educational and management programs at the refuge.

Other National Wildlife Refuges in urban areas could be mentioned; each would have a different history. The Mason Neck National Wildlife Refuge, located along the Potomac River, about 30 kilometers from the Nation's Capitol, is the first refuge established specifically for the endangered southern Bald Eagle. Consisting of 672 hectares of woods and marsh, it became a national wildlife refuge in 1969,largely because private citizens, with the help of the Nature Conservancy, worked to protect the area as an eagle nesting site, rather than have it become a housing development (Riley and Riley 1979). Another example is the San Francisco Bay National Wildlife Refuge. This was established in 1972 to protect over 9300 hectares of open space for wildlife, and to provide a site for outdoor education and wildlife-oriented recreation.

An example of how the National Park Service (NPS), a bureau of the U.S. Department of the Interior, contributes to urban wildlife conservation is the work (research, planning, and management) being done in connection with the Gateway National Recreation Area. This area encompasses the Jamaica Bay Wildlife Refuge/Breezy Point region of New York, Staten Island in New York, and Sandy Hook in New Jersey, totaling 10,787 hectares of land and water (Tancredi 1983). The varied areas encompassing Gateway have been allocated into six management zones insofar as recreational use is concerned. The Protection Zone includes natural areas so sensitive to human activity that they are available for use only under special conditions. Among these areas are high and low salt marshes, primary dunes, freshwater marshes, and any identified critical habitats. At the other end of the spectrum are Development Zones that are used for educational programs and such things as day camping, staff housing, community events, athletics, historical interpretation, and organized group outings. As Tancredi (1983) pointed out, a concern for the natural environment must also be a concern for the impact of urbanization. He stated "... it is no longer constructive for those who consider themselves environmentalists to separate their concern for the man-made environment, since the fate of the two are now seen as inseparably related; and ecological principles have demonstrated the interdependence that binds natural and urban systems together..."

The Jamaica Bay Wildlife Refuge --3,706 hectares of marsh, wetlands, ponds, and forested areas --is managed by NPS. In 1953, New York City, through its subway system, had dredged Jamaica Bay and created a solid fill right-of-way on which to place a new railroad, and then the City agreed to dredge an additional 6 million yards of sand and deposit it as berms to create two impoundments to be managed as a refuge. The City Parks Department then began a planting program of vegetation selected for its value to provide habitat for birds. Thus, the refuge consists of man-made habitat as well as remnants of natural habitat which the NPS is attempting to manage for wildlife and people. Among other things, NPS, since 1979, has developed a two-phased plan for habitat improvement and introduction of regionally native species of amphibians and reptiles on the refuge (Cook 1982 and as presented at the urban wildlife symposium, November 1986).

In Rock Creek Park, Washington, D.C., the NPS began a program in 1976 whereby selected tracts of land that traditionally had been kept in closely cut grass were converted to herbaceous meadows. These meadows added habitat diversity and cost less to maintain.

When the attractive coastal wilderness of Point Reyes peninsula north of San Francisco was threatened by subdivision, logging, and freeway building in the late 1950s, the NPS recommended that it be included in the National Park System. Local activists and a sympathetic Congress finally forged a bill that was signed by President Kennedy in 1962, establishing the Point Reyes National Seashore. Ten Years later, the Golden Gate National Recreation Area (GGNRA) was established by Public Law 92-589. GGNRA/Point Reyes together now represent one of the nation's largest coastal reserves at the fringes of the greater San Francisco area, home to over five million people, many of whom had not the opportunity to visit more remote parks (USDI, Natl. Park Serv. 1980).

The Corps of Engineers shares responsibility with the U.S. Environmental Protection Agency for control of pollution in navigable streams and their tributaries. Also the Corps has an important role in regulating coastal wetlands under Section 10 of the Rivers and Harbors Act of 1899 and in regulating both coastal and inland freshwater marshes under Section 404 of the Clean Water Act.

State Agencies

The survey conducted by the Urban Wildlife Committee of TWS in 1983 (Lyons and Leedy 1984) indicated that only six states had urban wildlife programs identified as such --Kansas, Missouri and Tennessee where programs were initiated in 1978, Utah (1979), Washington (1980), and New Jersey (1983); however, many other states reported that urban wildlife was given attention as part of other program activities, particularly nongame. The then (1983) existing programs stressed extension, education, habitat management, and animal damage control.

With respect to habitat, Miller (1978) reported on New York State's program of inventorying urban and suburban lands as wildlife habitat through use of aerial photographs, census, and land use data. At the November 1986 national urban wildlife symposium, several papers were presented on methods of inventorying and appraising urban-suburban wildlife and wildlife habitats. Among these was one that described use of Landsat Thematic Mapper (TM) satellite data in computer compatible digital format to interpret vegetative cover and inferred land use for the St. Louis area. Information developed through this system has been used by municipal officials to justify acquisition of open spaces in their cities and in making parkland management decisions (Tylka and Cook 1986).

Approaches and techniques for inventorying wildlife and wildlife habitat vary widely, but the objective, i.e., the generation of information and identification of areas to permit better planning, protection, and management, is much the same. The Colorado Division of Wildlife, for example, maps the overall distribution or some stage of the life cycle of economically important or threatened species for use in evaluating developmental impacts on the resource (Bissell et al. 1986). The next logical step, after determining what and where the resources are, is to develop and implement plans and management.

Usually this involves cooperation with local governments and municipalities and support of the local people, examples of which will be described later.

The Urban Wildlife Committee of TWS has prepared guidelines for possible use by state conservation agencies in implementing urban wildlife programs under their administration. The committee (see Tylka et al. 1986) listed as major program objectives:

1. conserving and managing the available fish and wildlife resources in such a way as to maintain, enhance, or create habitats for populations of desirable species,
2. enabling urban and suburban residents to enjoy to the fullest extent possible the fish and wildlife resources of their community,
3. educating residents so they can better appreciate the fish and wildlife resources and their ecological requirements and interrelationships, and
4. advocating sound, integrated wildlife control programs, including habitat alteration and/or removal of ofending animals, to minimize conflicts between urban wildlife and people.

The committee suggested that as a first step in initiating an urban wildlife program, the agency may wish to provide training for the existing professional staff through an in-house training program or by subsidizing the training of selected staff members at one of several universities now offering courses in urban-nongame wildlife management. A course, expected to be offered for the first time in the spring of 1987 at Colorado State University, is open to working landscape aschitects, planners, biologists, and others interested in learning more about urban wildlife planning and management, as well as to regularly enrolled natural resources majors.

The committee recommended that an urban wildlife component be part of a state's comprehensive plan for fish and wildlife as defined by the Fish and Wildlife Conservation Act of 1980; that urban wildlife biologists employed by state conservation agencies work closely with the Cooperative Extension Service, city and county recreation and planning departments, the local public school system, and citizen organizations; and thirdly, that an urban wildlife program include four main elements --inventory and research (5-25% of program budget), wildlife planning and management (30-60% of budget), public information, education, and extension services (30-60% of budget), and urban habitat acquisition, development, preservation, and conservation (5-25% of budget). The program will vary according to needs; it should be tailored to blend with existing programs of the wildlife agency as well as to fulfill the needs of urban residents and the urban wildlife resource. The committee concluded its report with its notion of the qualifications, training and experience that an urban wildlife biologist should have. Universities in the business of training professionals, and administrators who hire biologists to implement their urban wildlfie programs, should take note.

Local Agencies and Citizen Groups

Local county and municipal agencies and citizen groups have an important role to play in urban wildlife conservation. For example, in 1927 a Maryland state law was passed authorizing the formation of a Maryland-National Capital Park and Planning Commission for the Montgomery County and Prince George's County, Maryland suburbs of Washington, D.C. This agency coordinates development in the bicounty area, and levies taxes, issues bonds, and condemns property (if necessary) for the purpose of acquiring land for parks, pathways and other public places. On 15 December 1968, the Commission approved a resolution that requires at least 66% of each regional park (parks of 90 hectares or more) to be maintained in natural areas or conservation areas; the remaining one-third of a regional park may be developed for recreational activities, i.e., as active-use areas.

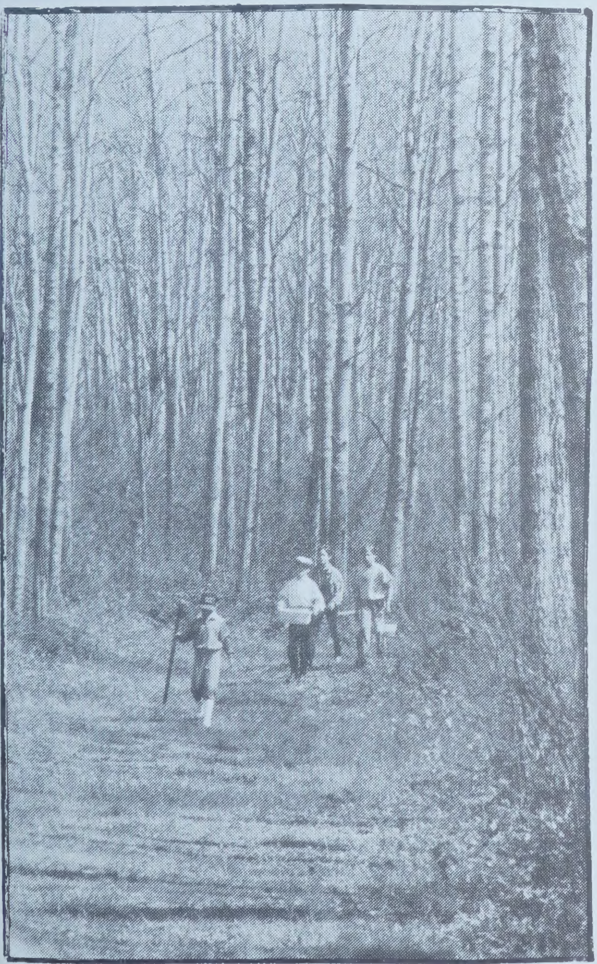
Hench et al. (1986) proposed the creation of a natural resources management program to better protect and manage natural resources in the parks. According to these authors, natural areas and conservation areas positively impact active-use ares by contributing to the character of the latter, by serving as outdoor classrooms for nature study and outdoor laboratories for scientific research, and by providing the tranquil environment that many park users seek. Carefully designed trails --including those for walking, jogging and horseback riding --can penetrate the nature-conservation areas. Observation platforms, study blinds, food and coverplots, and feeding stations can facilitate a safe and enjoyable interaction between people and wildlife. In turn, active-use areas can positively impact nature-conservation areas by providing a broad constituency of park users who can be called upon to support the park department politically when alternative land use proposals originating in other county agencies threaten a park's integrity.

Hench et al. (1986) further recommmended that a natural resources concept plan be prepared and compared to the recreation concept plan during the master planning process for a park. Trade-offs in natural resource and recreation values should be discussed and negotiated. Although these recommendations have not been formally adopted by the Maryland-National Capital Park and Planning Commission, we believe they are meritorious in that they attempt to represent a balance between conserving a park's natural resources and meeting public recreational needs.

The Audubon Society of Portland, Oregon has identified valuable wildlife habitats in that area and has worked for their preservation. As pointed out by Matthews and Lewandowski (1986), New York City contains almost eight million people, over 25% of the city land area is still in open space, and most of this open space is the responsibility of the New York City Dept. of Parks and Recreation (NYCDPR). An Urban Park Ranger Program was established by NYCDPR in 1979 and now over 100 park rangers combine patrolling to protect park patrons with educating the public through interpretive walks and programs. New York State's Department of Environmental Conservation provides factual information on natural resources management and, beginning in 1983, has conducted a workshop on natural resources management to aid in the training of the rangers. Formal programs created in coordination with the New York City Board of Education and conducted by the rangers provide environmental education for city youngsters and instill in them a positive attitude toward parks.

Local citizen groups can have much influence on the course of development in urban and suburban areas. As an example fairly typical of what is going on through the United States, we suspect, we briefly describe a current situation in an urbanizing county (Fairfax, Virginia) near Washington, D.C. Huntley Meadows Park, covering 510 hectares, is the largest wetland and wildlife preserve in northern Virginia. A biologically diverse area, it enables Washington area residents, biologists, and students to observe wildlife no longer found elsewhere in the area.

The U.S. Department of the Interior gave Huntley Meadows Park to Fairfax County in 1974 under a quit claim deed which stipulated that it could be used only for park and recreation purposes. In 1983, the County produced an Environmental Assessment (EA) for a proposed four-lane divided highway through Huntley Meadows that would ultimately carry 40,000 vehicles a day. Although the National Park Service of USDI approved the highway in 1983 upon a finding of "No Significant Impact" based on the county's EA, it has recently (1986) rescinded this finding because of the efforts of a local citizens group. The Citizens' Alliance to Save Huntley Meadows (CASH) successfully brought the EA's defects to the attention of the Assistant Secretary of the Interior for Fish, Wildlife and Parks, who directed Fairfax County to prepare a new environmental study. The revised EA is expected soon (1987) and 45 days will be allowed for public review and comment. The assessment will address construction and long-term impacts on aquatic and terrestrial ecology, geology and soils, topography, surface and ground water quality, air quality, vegetation, wildlife, land suitability, aesthetics and noise, as well as proposed mitigation efforts. This account was based on information provided by the Public Affairs Office of the Ecological Society of America which requested members of ESA's Metropolitan Washington Chapter to comment on the adequacy of the EA wihin the 45-day period (Amy Mathews, pers. comm., 12/22/86).


Young naturalists develop an appreciation of their environment through natural history study in urban parks (Photo: Darryl Murphy).

Although the Huntley Meadows case remains unsettled (January 1987), organized local citizen associations can be effective in preserving natural areas. For example, in 1961, local authorities in Baltimore, Maryland, prepared and approved a plan to construct Segment 9 of Interstate 70 North Expressway through the center of Leakin Park, a relatively undisturbed, 126-hectare climax mixed mesophytic forest with some trees over 200 years old. Leakin Park is a portion of the Baltimore municipal park system known as the Leakin-Gwynn's Falls Park complex and constitutes about 25% of the total public park acreage within the Baltimore City limits. In response to concerns of a local citizens' association --Volunteers Opposed to the Leakin Park Expressway (VOLPE) --a court ruling in 1972 blocked construction of the highway through the park. Subsequent efforts by VOLPE and its supporters have effectively protected the park from highway development.

Business and Industry

Many business firms and industrial companies have contributed to urban wildlife conservation through grants for research, the donation or leasing of land for urban parks and refuges, support of education, and management of their own lands and facilities in urban and suburban areas. NIUW has conducted surveys of the electric utilities industry (Leedy et al. 1980), the petroleum industry (Leedy et al. 1985), and the coal surface mining industry (Leedy et al. 1985). The reports based on these surveys contain numerous examples of how these industries, both voluntarily and because of environmental laws, have acted to protect and preserve natural areas and otherwise promote urban wildlife conservation. Likewise, the proceedings of the symposium, "Wildlife Values of Gravel Pits," (Svedarsky and Crawford 1982) contains several papers relevant to urban fish and wildlife conservation, e.g., Knox (1982) and Oldenburg et al. (1982). Much sand and gravel is extracted from deposits in or near cities, and many of the mined areas fill with water which, with management, can provide fishing opportunities for urban and suburban residents. It is estimated that 45 to 90 hectares of gravel pit ponds could be created each year in Colorado (Knox 1982). In Kane County, Illinois, north of Chicago, the Meyer Material Company of Des Plaines, with guidance from biologists of the Max McGraw Wildlife Foundation, has done an exemplary job of reclaiming gravel pits for Canada Geese and other wetland and terrestrial wildlife species, as well as for fish.

Goins and Arnold (1986) described efforts by the Chevron Corporation, San Francisco, California to protect and preserve, through its sanctuary or preserve on company land, and through research and habitat management, the endangered El Segundo Blue Butterfly. Numerous other examples could be mentioned of how industry has helped protect threatened and endangered species (see references above).

Getting It All Together

Implementation of urban wildlife conservation programs usually requires the cooperation of agencies at different levels, the involvement of various organizations, and the support of the people. It requires leadership (knowledgeable citizens and trained personnel); the desire to get things done; and adequate funding. And often, it requires politicking, negotiating --give and take. More and more, it appears that with the exception of federal funding programs, like the Land and Water Conservation Fund, and various state schemes for providing funds, the conduct of urban wildlife conservation programs will largely depend upon local initiative; in fact, getting federal or state funds or other assistance depends upon leadership and interest on the part of citizens in the local community.

In our opinion, the development of an urban wildlife program in the rapidly growing City of Tucson, Arizona is a good example of cooperation, i.e., of getting it all together. As described by Shaw and Supplee (1986), steps in the evaluation of an urban wildlife program in Arizona included: (1) creation of a habitat evaluation program (1979) based on a data management system developed by the Nature Conservancy (a private conservation organization); (2) creation of a nongame division in the Arizona Game and Fish Department (1983); and (3) adoption of an urban wildlife policy by that department (1986). The habitat data management system was originally known as the Arizona Natural Heritage Program. This program data base, including location files of sensitive and threatened animal and plant species, was transferred to AGFD in 1983 and is now known as the Arizona Nongame Data Management System. Information in the data base is integrated into the agency habitat reviews.

The crucial element that has enabled a significant urban wildlife program to develop in Tucson, according to Shaw and Supplee (1986), has been the development of a coalition of interests, all fighting for complementary objectives. They cited as examples that, at the same time the AGFD was working to save riparian habitats, the Pima County Urban Design Commission was recommending protection of water courses for aesthetics and recreation, and the Open Space Committee was promoting water courses as a logical foundation for an interconnected open space system. Concurrently, the University of Arizona was conducting new studies that provided data on urban wildlife habitats. This coincided with an upsurge in public concern for comprehensive planning and with a sympathetic Board of Supervisors.

Thus, altogether, a favourable climate for integrating wildlife conservation into the planning and development processes of this community was created.

We might add that in connection with the development of wildlife and wildlife habitat information through research partially supported by real estate developers, some university students were receiving training that should be helpful in implementing future urban wildlife programs.

The development and implementation of wildlife programs in cities and suburbs is more difficult than when conducted on state or federal land, or with large rural landholders. Among other reasons are the competing demands for space and varied interests of urban residents. Landscape architects, engineers, developers and builders have their own ideas of what, where, and how development should proceed, as well as local residents.

Bissell et al. (1986) of the Colorado Division of Wildlife consider zoning to be a major tool of local governments, especially county governments, in regulating land use. They suggested that zoning is particularly applicable in protecting wildlife habitat when implemented through and by the local government or citizen groups. They believe that federal and state agencies should provide technical assistance and advice to local governments, but that zoning when under local control is more successful than when under state or federal control. In Colorado, when the state wildlife inventories and distribution maps indicate that development would have a high impact on wildlife, they believe developers should be required to file a conservation plan with the county planning commission and work with the State Division of Wildlife and citizen advisory groups in deciding the course of development. An important part of the work of these citizen advisory groups is to get significant community values (including wildlife) considered in policy and planning decisions. As Bissell et al. (1986) pointed out, wildlife resources should not be viewed as obstructions to development, but as local amenities that may enhance or modify development. Ecologically sound long-range planning is needed; otherwise, urbanization tends to proceed according to convenience and economics, with little recognition of environmental values.

As has been pointed out by Dasmann (1966), Shaw and Supplee (1986), and others, wildlifers have to work with people involved in planning and zoning, transportation, flood control, and industry, and with private developers. Wildlifers should attend public hearings, participate in citizens' committees and provide written evaluations of various plans and proposals. They need to explain biological facts and ecological principles to decision makers who, if they were informed, might avoid some of the mistakes commonly made. Public education is very important and in the case of the urban wildlife program in Tucson, a simple booklet was prepared for educational use in that area.

It is much more difficult to integrate wildlife into inner city areas --the best opportunities here are in redevelopment projects --and in low income housing developments, than in suburban and new developments. An approach that is receiving considerable impetus from the President's Commission on Americans Outdoors is to develop an interconnected greenway system of public open spaces. This could incorporate, insofar as possible, mini-parks in urban areas as well as larger city, state, and federal parks, but would be based largely on riparian habitat along the nation's streams.

In addition to outright purchase, easements, and zoning ordinances, regulations at various levels are a means of protecting natural areas and significant wildlife habitat. Though authority for enforcement of some of these regulations stems from such federal legislation as the Endangered Species Act, National Environmental

Policy Act, and the Clean Water Act (especially the 404 permits), state and local governments have an important regulatory role. For example, the State of Connecticut and local Connecticut municipalities have strong wetland protection regulations. Currently all but 13 of Connecticut's 169 towns regulate freshwater wetlands at the local level (Aurelia 1986). If wetlands are regulated by the municipality, a citizen board or agency is the controlling authority and special inland wetland agencies, conservation commissions, planning and zoning commissions, or environmental protection boards are appointed as the regulatory authorities. According to Aurelia (1986), citizen membership on the board or commission varies between five and 11 individuals. Although most of these boards or commissions do not have staff, many have part-time clerical or professional help and a few have one or more full-time professional staff members. The Greenwich Inland Wetland and Watercourses Agency, for example, is a municipal board with seven members and three alternates. It has a three-member professional staff --a director, senior wetland analyst, and a compliance officer --and use of a five-member clerical pool shared with the Conservation Commission and the Planning and Zoning Commission.

Because of strong, local wetland protection regulations, developers have been forced to concentrate development on upland areas. A conservation zone subdivision often results, as was the case for the 1976 Old Stone Bridge subdivision (Aurelia 1986). This development, on 34 hectares in a 0.9 hectare residential zone, could have resulted in 35 0.9 hectare residential lots with only 15% (5.2 hectares) set aside as open space. However, the developer chose to submit a conservation zone proposal that ultimately resulted in 41 0.45 hectare lots and 14.5 hectares of open space. Two critical stream corridors and associated wetlands and ponds were preserved within the 14.5 hectares of conservation land, now permanently protected by a local Land Trust. Ten years after development (1986), all wetland-watercourse corridors within the 14.5 hectares of open space remain relatively undisturbed.

Concluding Remarks

This paper covers only a portion of the development of urban wildlife programs in the United States. We have not done justice to research and education programs relevant to urban wildlife conservation, nor to the analysis of values of natural areas and wildlife in cities and suburbs. Rather than focusing on negative aspects, such as animal damage and nuisance control, we have emphasized the positive, especially with respect to means of preserving and protecting natural areas in urbanizing communities.

Though considerable attention has been given to urban wildlife conservation since the 1930s and 1940s, and particularly since the 1960s, the importance of natural areas and wildlife in or near cities where most people live, is not yet fully recognized. That this workshop in Calgary is being held, and other symposia and meetings dealing with urban wildlife have been conducted, is a good sign. We have described some examples of what professional societies, private conservation organizations, industry, and public agencies at different levels have done, or are doing, to further urban wildlife conservation. Many of the references cited in this paper, especially those pertaining to the published proceedings of urban wildlife symposia, contain information that you may find useful.

Other than for the assumed federal ownership (often fortuitous, or because of local public demand) and protection of natural areas in or near cities, and a limited federal role in research and education, increasing responsibility for urban wildlife conservation appears to be falling to state and local entities. Adequate funding remains as one of the most important constraints in implementing relevant programs. At the federal level, the Land and Water Conservation Act of 1965 has been very helpful in acquiring significant lands. At the state level, because federal funds to date have not been appropriated to implement the Fish and Wildlife Conservation Act of 1980, the states have had to devise other means of funding nongame and urban wildlife programs. State income tax check-off legislation has been the primary method of raising new funds. Frier (1982) outlined New Jersey's sucessful effort in obtaining such legislation.

Another trend that seems obvious is the increased interest in preserving wetlands and in creating an interconnected system of greenways throughout the United States. This is being encouraged by the President's Commission on Americans Outdoors. To the extent that greenways can be preserved, especially in the natural state, in urban areas, wildlife and the public will benefit.

References Cited

Adams, L.W. and D.L. Leedy. (eds). 1986. Integrating man and nature in the metropolitan environment. Proc. Natl. Symp. on Urban Wildl., Chevy Chase, Md., 4-7 Nov. (in prep.).

Allen, D.L. (Chairman). 1973. Report of the committee on North American Wildlife Policy. Trans. North Am. Wildl. & Nat. Resour. Conf. 13:152-178.

Allen, L.J. (ed.). 1984. Urban fishing symposium. (Proc.) Am. Fish Soc., 5410 Grosvenor Lane, Bethesda, MD 20814. 297 pp.

Aurelia, M.A. 1986. The role of wetland regulation in preserving wildlife in suburban environments. Paper presented at the Natl. Symp. on Urban Wildl., Chevy Chase, Md., 4-7 Nov.

Bennitt, R. 1946. Summarization of the eleventh North American Wildlife Conference. Trans. North Am. Wildl. Conf. 11:511-518.

Bennitt, R., J. Dixon, V. Cahalone, W. Chase, and W. McAtee. 1937. Statement of policy. J. Wildl. Manage. 1:1-2.

Bissell, S.J., K. Demarest, and D.L. Schrupp. 1986. The use of zoning ordinances in the protection and development of wildlife habitat. Paper presented at Natl. Symp. on Urban Wildl., 4-7 Nov.

Cook, R. 1982. Representative animal community being created at Jamaica Bay. Park Sci. 2:3-4. (USDI Natl. Park Serv.)

Dasmann, R.F. 1966. Wildlife and the new conservation. The Wildl. Soc. News, No. 105, pp. 48-49.

Davey, S.P. 1967. The role of wildlife in an urban environment. Trans. North Am. Wildl. & Nat. Resour. Conf. 32:50-60.

Davis, J.D. 1974. Wildlife in your backyard. Pages 175-177. in Noyes, J.H. and D.R. Progulske. (eds.). A Symposium on Wildlife in an Urbanizing Environment. (Proc.) Univ. Mass., Coop. Ext. Serv., 213 Stockbridge Hall, Amherst, MA 01002. 182 pp.

Dumke, R.T., G.V. Burger, and J.R. March. (eds.). 1981. Wildlife management on private lands. (Symp. Proc.) Wisconsin Chap. of TWS, c/o Dept. Nat. Resour., 3911 Fish Hatchery Road, Madison, WI 53711. 568 pp.

Euler, D., F. Gilbert, and G. McKeating. (eds.). 1975. Proceedings of the symposium --wildlife in urban Canada. Office of Continuing Education, Univ. of Guelph, Guelph, Canada. 134 pp.

Frier, J. 1982. The income tax check-off in the northeast -- an experience in New Jersey. Trans. Northeast Sect. The Wildl. Soc. 39:138.

Goins, A.E. and R.A. Arnold. 1986. Habitat enhancement techniques for the El Segundo blue butterfly: an endangered species. Paper presented at the Natl. Symp. on Urban Wildl., Chevy Chase, Md., 4-7 Nov.

Gottschalk, J.S. 1968. Opening remarks. Pages vii-viii in Man and Nature in the City, a symposium. USDI, Bur. Sport Fish. and Wildl. (U.S. Gov't Printing Off.), Washington, D.C. 92 pp.

Hench, J.E., K.V. Ness, and R. Gibbs. 1986. Development of a natural resources planning and management process. Paper presented at the Natl. Symp. on Urban Wildl., Chevy Chase, Md., 4-7 Nov.

Kirkpatrick, C.M. (ed.). 1978. Proceedings, wildlife and people --the 1978 John S. Wright Forestry Conf., Purdue Univ., West Lafayette, In. 47907. 191 pp.

Knox, R.F. 1982. Fishery management in Colorado's gravel pit lakes. Pages 208-210. in Svedarsky, W.D. and R.D. Crawford. (eds.). Wildlife Values of Gravel Pits. (Symp. Proc.)

Leedy, D.L. and L.W. Adams. 1986. Wildlife in urban and developing areas: an overview and historical perspective. Paper presented at the symp. "Integrating wildlife conservation and new residential developments." School of Renewable Nat. Resour., College of Agric., Univ. of Arizona, Tucson. (Proc. in prep.)

Leedy, D.L., L.E. Dove, and T.M. Franklin. 1980. Compatibility of fish, wildlife, and floral resources with electric power facilities and lands: an industry survey analysis. Edison Electric Inst., Washington, D.C. 20036. 130 pp.

Leedy, D.L., L.W. Adams, and L.E. Dove. 1985. Environmental conservation and the petroleum industry. Am. Petroleum Inst. Washington, D.C. 47 pp.

Leedy, D.L., L.W. Adams, G.E. Jones, and L.E. Dove. 1985. Environmental reclamation and the coal surface mining industry. Available as typescript rep. OSM-370, USDI, Off. of Surface Mining, Washington, D.C., pending publication by Natl. Inst. for Urban Wildl., Columbia, Md. 134 pp.

Leopold, A. 1929. Report of the Committee on American Wildlife Policy. Trans. Am. Game Conf. 17:281-308.

Leopold, A. 1930. The American policy in a nutshell: report to the American Game Conference on an American game policy. Trans. Am. Game Conf. 17:281-308.

Leopold, A. 1933. Game management. Charles Scribner's Sons, New York. 481 pp.

Lyons, J.R. and D.L. Leedy. 1984. The status of urban wildlife programs. Trans. North Am. Wildl. & Nat. Resour. Conf. 49:233-251.

Matthews, M.J. and D. Lewandowski. 1986. Wildlife and natural resources information and education programs for New York City. Paper presented at the Natl. Symp. on Urban Wildl., Chevy Chase, Md., 4-7 Nov.

Miller, R. 1978. New York's urban wildlife program. Pages 27-30 in J. Galli. (ed.). Proc. of meeting on nongame/urban wildlife/endangered species program concerns. The Wetlands institute, Middle Township, N.J. 83 pp.

NAS. Undated. National Audubon Society wildlife sanctuaries. Leaflet. Natl. Audubon Soc., 950 Third Ave., New York, NY 10022.

Nature Conservancy. 1975. The preservation of natural diversity: a survey and recommendations. Final rep. prepared by Nature Conservancy for USDI. 212 pp. + app.

Nice, M. 1937, 1943. Studies in the life history of the song sparrow. Vol. 1, Trans. of the Linnaean Soc. of New York, Vol. IV, 247 pp.; and Vol. 2, The behavior of the song sparrow and other passerines. Trans. of the Linnaean Soc. of New York, Vol. VI, 328 pp.

Noyes, J.H. and D.R. Progulske, eds. 1974. A symposium on wildlife in an urbanizing environment. Plannning and Resour. Dev. Ser. No. 28, Holdsworth Nat. Resour. Cent., Univ. Mass., Amherst. 182 pp.

Oldenburg, R.C., R.A. Montgomery, T.M. Harder, and G.V. Burger. 1982. Gravel pits as fish and wildlife habitat at the Max McGraw Wildlife Foundation. Pages 215-220 in Svedarsky, W.D. and R.D. Crawford, eds. Wildlife Values of Gravel Pits. (Symp. Proc.).

Riley, L. and W. Riley. 1979. Guide to the National Wildlife Refuges. Anchor Press/Doubleday, Garden City, N.Y.

Shaw, W.W., coordinator. 1986. Integrating wildlife conservation and new residential developments. A symp. held 20-22 January, Univ. Arizona, Tucson. (Proc. in prep.)

Shaw, W.W. and V. Supplee. 1986. Wildlife conservation in rapidly expanding metropolitan areas: informational, institutional, and economic constraints and solutions. Paper presented at Natl. Symp. on Urban Wildl., Chevy Chase, Md., 4-7 Nov.

Stearns, F.W. 1967. Wildlife habitats in urban and suburban environments. Trans. North Am. Wildl. & Nat. Resour. Conf. 32:61-69.

Stearns, F. and T. Montag. (eds.). 1974. The urban ecosystem: a holistic approach, Part one. Dowden, Hutchinson & Ross, Inc., Stroudsburg, Pa. 31 pp.

Svedarsky, W.D. and R.D. Crawford. (eds). 1982. Wildlife values of gravel pits. (symp. proc.) Misc. Publ. 17, Agric. Exp. Sta., Univ. Minn., St. Paul, MN 55108. (Available for $10.00 prepaid from Northwest Agric. Exp. Sta., Univ. of Minn., Crookston, MN 56716. 249 pp.

Tanacredi, J.T. 1983. Coastal zone management practices at an urban natural park. Environ. Manage. 7:143-150.

TWS. 1983. Position statement of The Wildlife Society on urban wildlife. The Wildlifer, No. 201, p. 48.

Tufts, C. 1986. The National Wildlife Federation's urban wildlife programs -- working for the nature of tomorrow. Poster paper presented at the Natl. Symp. on Urban Wildl., Chevy Chase, Md., 4-7 Nov.

Twiss, R.H. 1967. Wildlife in the metropolitan landscape. Trans. North Am. Wildl. & Nat. Resour. Conf. 32:69-74.

Tylka, D.L. and E.A. Cook. 1986. St. Louis vegetative cover study. Paper presented at the Nat. Symp. on Urban Wildl., Chevy Chase, Md., 4-7 Nov.

Tylka, D., J. Schaeffer, and L. Adams. 1986. Guidelines for implementing urban wildlife programs under state conservation agency administration. Urban Wildl. Comm. rep., presented at Natl. Symp. on Urban Wildl., Chevy Chase, Md., 4-7 Nov.

USDI Natl. Park Serv. 1980. General management plan/environmental analysis Golden Gate/Point Reyes. U.S. Gov't. Printing Off., Washington, D.C. 279 pp. + map.

Authors' Addresses:
National Institute for Urban Wildlife, 10921
Trotting Ridge Way, Columbia, MD 21044,
U.S.A.

Urban Wildlife Areas - A British Experience

Robin Bovey

Unlike Canada, Britain has no natural areas left that have not been significantly altered by man, with a few debatable exceptions. Britain was once largely forested, but even 2,000 years ago a large proportion of that forest had disappeared. Since the modern agricultural revolution in Britain, which has taken place since the 1930s, the small area of semi-natural forest that did remain, has been halved to its present area of some 76,500 hectares. This is but one example of a long list of losses and destruction, which makes bleak reading (Nature Conservancy Council 1984) A present day look at land use in the U.K. shows that agriculture uses over 80% of the land area in the U.K. In England and Wales, the next largest land use classification is urban - 11% and growing.

Nature conservation has had to integrate with these land uses. The best sites are protected as National Nature Reserves and there are now over 200 of these, all created since 1949 and covering some 150,000 hectares; they are managed by the Nature Conservancy Council. Various other organizations also play a fundamental and direct role in wildlife conservation in the U.K. - all the rest though are non-governmental organizations (N.G.O.s). The largest of these is the Royal Society for the Protection of Birds with over half a million members.

The most effective protection afforded an important wildlife site is its designation, as a "site of Special Scientific Interest". This category of protection was made possible by the 1981 Wildlife and Countryside Act. Over 4,000 sites covering 1.5 million hectares are now protected under this legislation - much of this land is in private or public ownership, but the owner must consult the N.C.C. before carrying out any harmful practices. This powerful legislation is an example of the British public's concern and involvement in its countryside - the Wildlife and Countryside Bill resulted in more mail to MPs and more parliamentary commitee time than any other Bill before Parliament. This in turn was achieved by a wonderful mobilization of public feeling by the N.G.O.s, which eventually resulted in this legislation.

But what has this to do with urban wildlife conservation? A great deal of course. Far too late, we have managed to take steps to ensure the survival of most of British present-day wildlife, but not without huge losses and undoubtedly more to come. The present day land uses ensure a huge pressure on the wildlife resources and their habitats.

Urban areas, particularly residential areas, are becoming increasingly important wildlife areas for some species - for instance bats, woodland birds, small mammals and many insects. Even inner cities are proving thay have a role to play in easing the pressure on wildlife.

Of equal importance is the role that wildlife plays for people in these overcrowded urban areas. For many people, the city parks or a tree-lined street or even House Sparrows on a busy city square are their only contact with the countryside and nature. For as in Canada, the 55 million people in Britain live mostly in urban areas. For these people, the rather formal urban parks are their "countryside" from one month to the next. They are used for a wide range of recreational activities: jogging, walking the dog, kite flying and birdwatching. But they were hardly ever envisaged as wildlife areas and indeed many are not anything more than formal gardens.

What other green areas exist? Railway embankments, old bomb sites, cemeteries, sewage lagoons it sounds somewhat depressing and many of these sites are prime redevelopment sites anyway.

To add to the problems of urban wildlife conservation in Britain comes a Thatcher government that has brought austerity and unemployment that makes Alberta today look like Shangri-la. The Government's policies have killed dead money that might have encouraged urban wildlife projects. It has abolished the left wing inner city councils, which took pride in their social programs, and unemployment is now over 3 million. In a nutshell, inner cities are suffering terrible degradation and degeneration. To use a good English understatement, potentially, the situation is somewhat gloomy.

I do not have space to give many examples of how the conservation movement has overcome these problems, and those that I am going to briefly use are from central London, for no particularly good reason. I have mentioned city parks and London's are famous - Hyde Park, Regents Park and Richmond Park are familiar names to residents and visitors alike. But what can be done to ensure their continuing wildlife diversity and where possible, improve these areas for wildlife? They are traditionally managed for public recreation, dead limbs of trees are neatly trimmed, shrubs pruned, grass cut and borders of flowers planted. However, there have always been "sanctuary" areas away from the ravages of the public - some of these have been in existence for decades. As the importance of such areas for wildlife became better recognized, so did the manager's awareness of the problems and more and more management for wildlife now takes place - more and better sanctuary areas, nest boxes for passerines, raptors, ducks, and bats, and reintroduction of native wildlflowers that once grew in these areas. Most of the parks are surviving remnants of ancient forests and even today despite their situation in the heart of London relict populations of plants and invertebrates survive - indeed, some invertebrate populations are nationally important.

Many of the woodland bird and wildfowl populations have made startling comebacks in recent years. Now, all three species of British woodpeckers breed in London. Kestrels have been quick to take advantage of positive encouragement since the 1960s. These small falcons are now a common sight in the parks, where they have broken with their country cousins' feeding habits and prey on sparrows, ducklings and even hamburger scraps! In 1890, the naturalist William Hudson wrote that he doubted whether Kestrels would ever return to London. During the 1940s a pair nested on the Houses of Parliament, by the 1950s, 5 pairs nested and today, over 100 pairs nest in Central London, either in park trees or on buildings, and occasionally they condescend to nest in nest boxes put up by companies or individuals to attract them.

Where so many pressures exist on wildlife in the countryside, the value of these urban wildlife areas becomes increasingly obvious. Some of the London reservoirs hold internationally important populations of Tufted Duck, Coot, Smew and Black-headed Gulls. Even in St. James Park - possibly the finest of London's inner city wildlife areas, truly wild populations of Mallard, Tufted Duck, Goldeneye and Gadwall vie with the ornamental wildfowl for bread and grain fed by visitors to the park.

Much of the praise for the success of these projects must go to an enlightened and enthusiastic management approach, but the general public are also heavily involved - it is they that so often generate the new management, either directly, or indirectly through the many N.G.O.s. Perhaps the most effective of these groups is the London Wildlife Trust - mind you even they have their problems, as in their attempt to reintroduce primroses to Primrose Hill, when the bureaucrats of the Greater London Council temporarily refused permission.

Ponds are significant sites for introducing natural history concepts to youngsters (Photo: Darryl Murphy).

However, the success of N.G.O. groups like this can never be overstated. They usually rely on shoestring budgets but through their energy and expertise they have mounted some wonderful projects and this is where the true value of urban wildlife conservation begins to be felt. It is not felt through grandiose and expensive projects that alienate themselves from the public from the very start. For if they are urban projects they must surely integrate with our everyday lives; no, it is rather the projects that evolve from public opinion, or which can be brought to the public's awareness and then capture their imagination. These projects involve people with their environment, bring people together and give them a positive involvement with their urban surroundings.

Consider a park on the south side of the river Thames in central London, within sight of Tower Bridge, somewhere in the region of one hectare in size. In 1967, it was proposed as an "ecology park" a small area of natural vegetation which should be "created". This was a totally new idea in Britain at the time. It took only a short while to generate enthusiastic response and by that autumn the William Curtis Ecological Park was born on the understanding that the site would eventually be needed for redevelopment. Plans included a small meadow, a mixed woodland, a pool and even a sand dune. The problem was how to remove tons of hardcore, import subsoil and grade the site; simple - use volunteers. They moved the hardcore by hand. Subsoil was brought in by advertising a subsoil dump for contractors, who were so grateful they lent machinery to grade the site. Over 150 species of plants were brought in and within two years, over 350 species had been recorded there. Frogs were introduced and were spectacularly successful. A survey of insects two years after it opened showed over 200 species present - only 5 of which had been introduced. Perhaps most interesting was the colonization of the site by butterflies - by 1984, 21 species had been recorded - 16 regularly in the three preceding years. All this in central London. In the eight years of the park's life, 100,000 children alone visited the site - their piece of countryside in the heart of London.

The success of the William Curtis park sparked off other initiatives and the London Wildlife Trust now manages a new park - Camley Street near Kings Cross Station in central London - only a hectare in size and opened in 1985, but already the first artificial Local Nature Reserve in Britain and booked solid by schools for 4 years. These projects were initiated on very small budgets - some $4,000 saw the William Curtis Park underway and from its inception, neither it nor any other similar project has had to close through lack of funds, although all of them could certainly make do with more cash.

There are various other examples of wildlife projects and I shall mention just a few. London's Victorian cemeteries are a prime example. Take Highgate cemetery - closed in the 1970s, it had in effect run out of room by the beginning of this century. The two world wars had seen the area plunge into neglect and yet it was an exciting jungle of shrubs, trees and leaning gravestones that read like a Victorian Who's Who. When it closed in the 70s, the company had no plans to allow access to visitors but a group was formed - the Friends of Highgate Cemetery and today it is managed by them with the aim of continuing to allow public access, while maintaining its unique attraction and its wildlife diversity, only five miles from central London. The Friends draw together all possible management interests and lobby for funds to carry out necessary works.

The few remaining bomb sites from World War II are now valuable wildlife habitats and planners have been made well aware of these neglected jungles. They are prime habitats for Black Redstarts, which continue to be rare breeding birds outside these and other derelict sites in London. Wildflowers are often spectacular at these sites - as they are along the railway embankments of the many mainline services into London's 15 railway stations.

Another important facet of urban conservation has been the sponsorship by industry and commerce, who have shown far more willingness to cooperate in recent years, despite the economic hard times. There are many examples to choose from, but at one end of the scale there has been the production of educational material made possible by a bank, to a highly successful, national campaign to promote local conservation initiatives by an oil company.

Now I realize that the British do have a bit of a reputation for being eccentric (to put it mildly). Consider Major Coles who initiated the British Hedgehog Society in 1982 to provide Hedgehog escape ramps in cattle gates or Texas gates - a very popular appeal I might add. Some of these eccentrics have got really worthwhile projects underway, like Miss Constance Calver of Newcastle-upon-Tyne - she was fed up with the untidy back lanes around her house,so she mobilized an army of local volunteers, got professional advice and in her own words:

"created a sweet smelling area of growing things - not too attractive to attract vandals, but pleasant for us".

References

Conservation Foundation. 1985. The Conservation Review. Webb and Bower, Exeter, U.K. 175 pp.

Goode, D. 1986. Wild in London. Michael Joseph, London, U.K. 186 pp.

Nature Conservancy Council. 1984. Nature Conservation in Great Britain. N.C.C., Peterborough, U.K. 112 pp.

Nature Conservancy Council. 1984. Wildlife in the City. N.C.C., Peterborough, U.K. 20 pp.

Author's Address:
9848-84th Ave., Edmonton, Alberta.

Panel Discussion - Six Presentations

How Do We Promote the Establishment and Use of Natural Areas In and Around Urban Centres?

1. Tony Nette

Wildlife management in this province has evolved from a few regulations meant to limit the hunting of big game animals, in order to ensure everyone access to wildlife and to prevent severe depletions of populations.

Only a few generations ago, our society was primarily made up of rural residents. What may have seemed to them to be unlimited fish and wildlife populations were exploited for commercial purposes, sport, and often more importantly as a source of food. To use, see and hear these natural wild resources was part of everyday life to the average Albertan. As our population grew, however, more and more people crowded into towns and cities. Today the large majority of Albertans are urban dwellers.

Many of the more recent management programs of the Alberta Fish and Wildlife Division, such as bluebird trail projects; establishment of Wilderness Areas; the Peregrine Falcon recovery plan; production of educational printed matter; and numerous hunting restrictions; have been aimed at providing wildlife for the benefit of non-consumptive users. However, it was not until 1984 that a formal, province-wide non-game urban wildlife program was implimented to increase public exposure to wildlife in and adjacent to urban areas.

Throughout the province, biologists like myself had to sit down and take a hard look at what resources and opportunities existed, what had been done, what was being done and what could be done in terms of urban wildlife. The problems encountered and the approaches required, differed considerably from our traditional role of managing fish and wildlife on the huge tracts of wildlands elsewhere in the province. As you can imagine, it is very difficult to maintain or establish even small numbers of wildlife where so little undeveloped land remains.

Obviously, the key to maintaining populations of wildlife or fish, is to maintain adequate parcels of habitat. Within a city such as Calgary, where land is extremely valuable, this is no easy or inexpensive task. In order for Alberta Fish and Wildlife Division to meet its objectives of ensuring that a variety of wildlife-related experiences and activities are made available within urban centres, natural areas within these centres are essential.

The Division cannot, however, meet these objectives alone. In fact, because we are not landowners, the urban wildlife for which we are responsible usually occupy land belonging to the city, private citizens, industry or some other government department. Therefore, we most often act to provide advice, support and assistance in managing the wildlife and its use by the public.

In summary, the Alberta Fish and Wildlife Division, strives to provide a variety of outdoor recreational opportunities and printed education information, based on fish and wildlife resources, for the benefit and enjoyment of the citizens of Alberta. In recognition of the fact that the majority of Albertans live within urban centres, the Division endeavours to provide a portion of these activities within urban areas.

The Division is fully supportive of programs which establish and maintain natural areas within or adjacent to urban centres and which increase the exposure of the urban public to wildlife.

Author's Address:
Regional Wildlife Biologist, Calgary Area Office, Alberta Fish and Wildlife, #202, Sloane Square, 5920 - 1A St. S.W., Calgary, Alberta, T2H 0G1.

2. Jim Posey

Naturalist's Outlook

Naturalists often have a greater appreciation and knowledge of urban natural areas than any other group (with the possible exception of children who build treehouses and dig holes). However, there is a tendency to use natural areas for our personal enjoyment, without sharing our appreciation or knowledge. I remember that when I first became interested in plants, I did not explore natural areas in the City, other than those which came to my attention through the course of my daily activities. I was eventually persuaded to take a course through Continuing Education at the University and then to join the Calgary Field Naturalists' Society (CFNS). Only then did I begin to discover what the city had to offer in the way of natural areas. Naturalist organizations can make a significant contribution by collecting and disseminating information about natural areas, and by promoting their appreciation and preservation.

The primary objective of most naturalists is basically receational, but because our recreation depends on a threatened resource, an important secondary objective has to be public education. It goes without saying that much of our enjoyment of nature comes from educating ourselves and each other, but we need to educate others as well. The education of the general public, (particularly the relatively large numbers of people who are sympathetic and interested but not actively involved), and the education of people whose decisions will affect the fate of natural areas, should be regarded as important objectives for naturalist organizations. Politicians, planners and administrators will welcome information and advice if it fills gaps, is credible and if it is made available before irrevocable decisions have been made.

In order to insure that information is available when it is needed, we should strive to keep records of what we observe and to pool our knowledge. Although government now has more professional naturalists available to collect and interpret information, it is still possible for amateurs to make significant contributions. Keeping records adds only a small burden to our recreational activities, and we can gather more information by this means than government could afford to pay for if it were gathered professionally. From a scientific viewpoint the kinds of information we gather may not be very useful, since it is not very systematic (Robins are reported mostly in the spring, and pass unremarked at other times). However, when decisions require scientific data that can never be obtained at reasonable cost, our information can be useful.

CFNS Activities

We have a tendency to assume that every naturalist club conducts the same sorts of activities. I know from my involvement with both CFNS and Red Deer River Naturalists that this is not entirely so. Subsequently, some of you may not be familiar with CFNS's activities relating to urban natural areas over the years. It has always somewhat amazed me that an organization of CFNS's size could have successfully undertaken some of the projects which have been completed. I hope that I can do them justice, since I am not as well qualified to tell you the history of these activities as many of the people here would be. Some of you were participants, I have only been an observer.

Records

All naturalist clubs conduct organized field trips of some sort, and almost all naturalists spend time in the field on their own, observing for pleasure. The first step, it seems to me, in making a contribution to the preservation of urban natural areas, is recording observations and pooling the records. CFNS has, since the mid-sixties, encouraged members to record and report what they see on standard forms. At one time these observations were published in the club magazine. This approach was so successful that the editor of the magazine eventually rebelled, with the result that individual sightings and records are no longer published, except in the Alberta Bird Record. I fear that the recording of sightings and the collection of records has fallen off somewhat since.

Natural Areas Group (NAG)

The most significant contribution of the CFNS to the preservation of natural areas stems from the activities of the NAG. It would be fascinating to know what social dynamics led to the remarkable activities of this group in the early seventies. If I had to guess, I would imagine that the influence of Dr. Charles Bird, then the curator of the herbarium at the University of Calgary, was a key factor. Certainly the involvement of other professionals such as Steve Herrero, Derek Johnson, Bob and Barb Danielson, Harold Pinel, Gordon Prichard and Beryl Hallworth was significant. In the course of the decade, the NAG published several reports on natural areas in Calgary. These reports have had a significant impact on the planning of land development in the city and on the administration of parks.

a) Publications

Starting in about 1972, the NAG of CFNS started to publish reports on natural areas in the city. These biophysical inventories of the areas were astonishingly complete for the products of volunteer effort.

1) 1973: "Five Natural Areas"
2) 1974: "Natural Areas 1973" (edited by C.D. Bird)
3) 1975: "Calgary's Natural Areas, A Popular Guide" (edited by Peter Sherrington)
4) 1976: "Natural and Recreational Features of Sandy Beach"
5) 1980: "Calgary's Natural Areas" (edited by Harold Pinel)

b) Courses

Another program of the NAG was a course run through the Continuing Education Division of the University of Calgary. Registrants visited various natural areas in the City after having been introduced to them in class. Each natural area was reviewed by a NAG member who had adopted that area, plus the resources of the biology department were used to make plant and bird specimens available for study. This course was run for two years in a row in the mid-seventies and was extremely popular.

Field Trips

Many CFNS field trips go to locations outside the city, but we do sponsor, in conjunction with the City, field trips to urban natural areas. The NAG has field trips in the spring and summer and the Botany Study Group goes out weekly during the spring and summer, mostly to areas in the City.

Opportunities For Future Activities

Small Natural Areas

Most cities and towns have small areas of relatively natural habitat which are not large enough to designate as natural area parks, but which still have habitat and aesthetic value. In many cases it is these small areas, taken in aggregate, that give a place its character. Imagine Red Deer, for instance, without its patches and strips of spruce and riverine forest. Such areas are not likely perceived by controlling agencies to have any particular value and are subject to gradual attrition due to such activities as mowing "to control weeds", stockpiling of dirt, indiscriminate use by recreational vehicles and, most ironically, by landscaping. Naturalist clubs, by keeping records of what they find on field trips, or by initiating a special project, could identify and inventory such areas and promote their preservation.

My favourite example of such an area is opposite the Children's Shelter in West Hillhurst, Calgary. This area, of about a quarter of a city block, was at one time "maintained" by the Parks department by periodic mowing. Enough of the local residents recognized the value of the site that they persuaded Parks not to mow and to erect barriers to keep vehicles off the area. The perimeter is still mown to reduce risk of fire but most of the area is left alone. I have seen a wide variety of plants, including Yellow Lady Slipper orchids, Arrowgrass, Shooting Star, White Camas, Prairie Onion, rose, Yellow Flax, Cattail and several willows, in this area. While I do not often notice birds, I have seen Hungarian Partridge and Mallard there.

Areas like this are unlikely to fall under the jurisdiction of a single civic department and appear in planning maps as white, featureless areas. Rarely can an engineer designing a new sewer distinguish, from documentation on file, between a patch of undisturbed native vegetation and a collection of rubbish heaps. An inventory by a naturalist group, made available to the people whose decisions affect the future uses of these areas, might eliminate much needless destruction.

Surrounding Areas

Where communities are expanding, outlying areas should be examined for valuable potential natural areas. These sites should be documented and brought to the attention of planning agencies. The extent of this search is defined by Frank Lloyd Wright's advice to buyers of rural sites for commuter homes. "Find a nice area, measure the distance downtown, multiply by ten, and look again". It may actually be profitable for subdivision developers to preserve natural sites, particularly in places where there are coulees and springs.

Several years ago, I read a report in "Engineering News Record" reporting the success of a California subdivision planner who had worked out a computer program to generate large numbers of alternative subdivision plans based on the total volume of dirt which would have to be moved to implement each plan. By having the computer plot out the 10 to 15 most promising plans for human evaluation, they were producing subdivisions which cost less than those produced by the competition (since moving dirt is expensive), and which were more attractive than competing subdivisions, since they often preserved tracts of natural vegetation. The computer was the key to this process. The only reason conventional planning starts out by levelling an area, is because it is too complicated to explore alternatives using manual methods while juggling existing topography, street grade and curve requirements, lot subdivision criteria and services. It is much simpler to pretend that the site is like the blank sheet of paper on the planners desk at the start. While naturalists may not be able to influence the working methods of subdivision designers, we can at least dispel the notion that there is nothing there before a subdivision is constructed.

Constraints

Naturalist groups tend to be among the least expensive of clubs or associations a person might join. They are often barely able to pay for printing, room rental, postage and other expenses needed to sustain day to day activities. Anything done by volunteers must also be constrained by time and energy available. Two necessary conditions for projects like the Natural Areas publications of CFNS are sufficient enthusiasm and commitment from people qualified to carry the project out, and enough money to pay printing and production costs. As a result of the "Popular Guide" project, CFNS has been fortunate in being able to set aside a special fund from which future projects of this nature can be financed. We try not to lose money in the long run, although a project may not break even for several years. The current constraint in our case is the lack of volunteer enthusiasm needed to conceive projects and propel them to completion.

All naturalist groups should

examine the impact they might be able to have in the long run. Education and recording of information for future use are both activities which can make long term contributions. Each group will have its own peculiar strengths and weaknesses. CFNS had access to the facilities and personnel of the University, but there are professional biologists and other facilities in other localities. We once had a very active program for children which owed its existence to two ladies who found running that program rewarding. Every group has unexploited resources which could be applied to something more significant than the activities of the passing day.

Author's Address:
Vice-President, Calgary Field Naturalists' Society, Box 981, Calgary, Alberta , T2P 2K4.

3. Liz Stinson

Given the titles and expertise of the other panel members and their concerns about the use of urban natural areas by the public generally, I will address my comments specifically to the issue of the use of such areas by the formal education system. Or, to put it another way, by your favourite group of 45 kindergarten students - like the ones who visited me last Tuesday. I will use their experience periodically to illustrate the sorts of problems faced by all those involved in such an adventure.

But first, some background. The Strathcona Wilderness Centre where I work is owned by the County of Strathcona and operated by the Recreation and Parks Department. It consists of 223 hectares of fairly dense poplar forest with a few spruce bogs. The topography is typical of the surrounding Cooking Lake Moraine area east of Edmonton. This land was acquired by the County over time through purchase, donation and in lieu of payment of back taxes during the depression. It has existed as the parcel it is today for more than 25 years.

Capital development to date has been minimal and includes only three buildings and 12 km of trails. Part of the latter have historical significance as they were once part of the Tofield to Edmonton wagon route known as the Beaver Hills Trail. These trails are used for hiking in the summer and are groomed for some of the best cross-country skiing east of the foothills in the winter.

Instructional programs for the general public and school groups have taken place on the site for about 5 years, but with the placement of two full-time staff at the Centre in September, 1985, growth in program participation, particularly by schools, has been dramatic. (I do not know how long I can look forward to such growth in light of recent news from the provincial government).

Two hour programs in environmental awareness, beaver, pond and snow studies, adaptations, orienteering, snowshoeing, cross-country skiing and canoeing are now being offered to school groups on a seasonal basis. The winterized residential facility, though fully booked by youth groups on weekends is not yet heavily used by schools during the week.

So much for the advertisement - now you know what these kindergarten kids were heading for as their bus travelled the 18 km east from Sherwood Park last Tuesday. But what had their teacher been forced to cope with to get them there? Kindergarten teachers are really the luckiest of the lot. Educational wizards have long since decided that the five year old set learns best experientially, that is by seeing, hearing, touching and most of all, by doing. So their teachers are required by the Department of Education and are supported by relatively large field trip budgets to get their kids outside. Once those children turn six, however,they are no longer considered to need such experiences to the same extent and field trip budgets decline progressively.

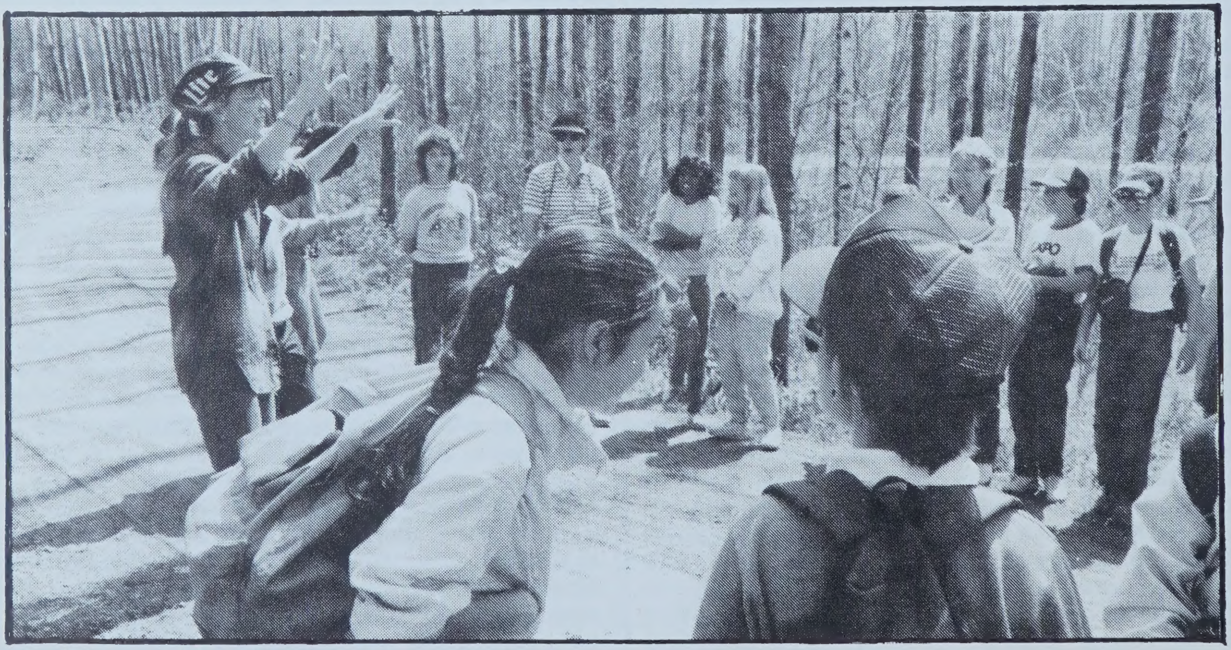
The kindergarten teacher, therefore, did not have any transportation dollar concerns. If she had she might have wanted to design and carry out a school yard field trip for her students herself. But with little guidance from Alberta Education in the form of the omniscient curriculum guides, nor from her own school board, she would have been on her own and with all the other pressures a teacher faces on a daily basis, well.... it's not required and it's a lot of work to organize, so why bother?

Grades one to six teachers in Strathcona County receive $80.00 per year to pay for buses for field trips. One bus for one day costs approximately $60.00, thus not too many field trips are possible unless parents contribute or schools wage fund-raising campaigns. Both of these are common place but both are influenced by the socioeconomic conditions of the time and place.

The kindergarten teacher had to come up with $80.00 to pay for two two-hour programs at the Wilderness Centre for her two classes. That fee reflects approximately 25% of the total cost of the program. As a municipal facility, we are supported by the County taxes, revenues and grants. Many teachers find the cost of our programs too high especially when it is combined with transportation costs. However, our program prices are comparable to those charged by our nearest neighbour to the west, the City of Edmonton.

Lack of curriculum guidance and dollars are, as I see it, the two key barriers preventing school groups from using natural areas more frequently. Change in the former has not come about despite many years of lobbying by the Environmental and Outdoor Education Council of the Alberta Teachers' Association, despite requests (that I know of) from individual teachers and parents, and despite the influence of such documents as The World Conservation Strategy (TWCS). TWCS proposes "environmental education programmes and campaigns to build support for conservation" and goes on to say that "school curricula should include environmental education both as an intrinsic part of other subjects (so that conservation attitudes can influence all activities) and as a separate subject (so that ecology can be taught more formally and its concepts more readily grasped)."

Environmental education, that aspect of an elementary student's



Children attending outdoor education classes at Strathcona Wilderness Centre (Photo: Darryl Murphy).

learning which as much as any would attract or draw her or him to natural areas, is an optional part of the elementary curriculum in this province. The Outdoor Recreation option presently available for junior high school students may soon be gone. Thus, it is left to those teachers who are personally interested in and committed to planting the seeds of an environmental conscience or ethic in their students to act, and they will, and they do on their own. But there are not many teachers so committed.

In order to try to interest and involve all those others not so interested, agencies outside the school systems including Parks Canada, Alberta Environment, Alberta Recreation and Parks, Alberta Forestry, Lands and Wildlife (particularly Fish and Wildlife Division), municipal Recreation and Parks departments and private groups like Lois Fenna at the Ministik Hills Field Study Centre are working to provide learning opportunities in natural areas for teachers and students. These opportunities come in many forms and may include (a) prepared programs complete with friendly naturalist and equipment, or (b) site specific program guides or other resource materials made available to the teacher beforehand (provincial parks follow this format) or (c) general activity guides with suggestions and ideas suitable for any site. The latter have been produced or provided by Fish and Wildlife Division (Project Wild materials in particular), Alberta Environment, F.A.N., the Youth Science Foundation in Ottawa, S.E.E.D.S. Foundation (Edmonton) and many hundreds of textbook publishers and educational materials suppliers.

But why should a teacher bother with any of this if it's not required, costs money and takes time and energy to organize? Elementary school teachers usually teach all or most subjects to their own students. A perfect setting through which to integrate environmental education across the curriculum as TWCS suggests, you might think. But the language arts, math, music and physical education guidelines do not usually feature an environmental component. Textbooks, approved by Alberta Education for these disciplines seldom suggest that teachers look for words to spell or distances to measure outside, let alone in a natural area. Without such forms of legitimized support from Alberta Education, outside agencies will still have to rely on the committed few teachers I mentioned earlier.

The County of Strathcona Recreation and Parks Department in 1985 identified the production of an Outdoor Master Plan as a key component of its Recreation Development Plan. Based on input from the public, the Department feels it has a mandate to produce a document which will "...outline all unique or significant natural environments [in the County]... and will recommend specific stategies for the management, preservation, protection and/or creative utilization or development of the County's outdoor recreation resources." One component of the Master Plan (which will be completed by September of this year) will be an Outdoor Environmental Education Program report. This will include recommendations for structured and unstructured educational opportunities for County residents including school groups.

Possible directions the Plan may take could include (1) the development of interpretive trails or sites closer to the County's major urban area, Sherwood Park, (2) production of general or specific materials that teachers could use on these sites or natural areas adjacent to their schools, (3) development of a trail system linking the urban area with natural areas that would permit bicycle, ski or foot transport thus eliminating bus costs. All of these directions would serve to reduce the hassle currently perceived by teachers as they try to get their students outside. The production of school yard activity packages is another possibility. These would give teachers the opportunity to try out activities and ideas in a familiar, nearby environment. With enough practice perhaps they would soon feel secure enough to take their classes farther afield.

But in general, I think solutions such as these are merely Band-Aids. None of them address the fundamental gaps in the curriculum planning of Alberta Education. And why should that department change when all these other agencies have stepped in to fill the breach and have taken over what I see as an education department's responsibility.

If I were to make one recommendation - and should the F.A.N. directors be in a position to accept resolutions from members at their meeting tomorrow, I will write one - it is that this organization add its voice to all the others in asking our provincial government to act to include environmental education as an intrinsic and special element in the elementary, junior high and senior high curricula in this province.

Author's Address:
Recreation Supervisor, Strathcona Wilderness Centre, County of Strathcona, Recreation and Parks, 2025 Oak St., Sherwood Park, Alberta. T8A OW9.

4. Bruce Richardson

Introduction

As a parks planner within the Parks and Recreation Department of the City of Edmonton, it is my function to provide:

"all those activities and experiences in which an individual chooses to participate in his leisure time and includes, but is not limited to, athletic, physical, historical, natural sciences, cultural, social, intellectual activities, experiences and programs".

To accommodate these functions, it is the responsibility of the employees of Parks and Recreation to:

..."increase the number of recreational and cultural opportunities in the community"

..."promote communication, cooperation and coordination between those people or organizations interested in improving or developing recreational or cultural opportunities in the community"

..."contribute to the enhancement of Edmonton's visual image and public environment".

The preservation of natural areas within the boundaries of Edmonton is just one of the responsibilities of Parks and Recreation.

Edmonton's Park System

Edmonton's open space system is comprised of three levels of parks- neighbourhood, district and city. Neighbourhood parks serve as a residential subdivision's open space and usually include a playground, community facility, baseball diamonds and outdoor hockey rinks. The district level park is a central open space for numerous subdivisions and includes separate/public schools and their accompanying sports fields. Both of these types of open space are obtained through the subdivision process required under the Planning Act (i.e. ten percent of the gross developable area).

The remaining type of open space provides recreational opportunities for the entire population of Edmonton. The majority of these lands are within the North Saskatchewan River Valley and Ravine System. The River Valley now encompasses an area of 7,425 hectares (18,348 acres), much of it designated for recreational use. This parkland has been obtained either through direct purchase or the subdivision process as environmental reserve. Environmental reserve is defined within the Planning Act as;

- a swamp, gully, ravine, coulee or natural drainage course,
- land that is subject to flooding or is unstable,
- unsuitable in its natural state for development,
- strip of land not less than 6

meters in width, abutting the bed and shore of any lake, river, stream or other body of water.

To ensure the preservation of this sensitive River Valley environment, two processes were initiated in the early 1980's by both the Parks and Recreation and Planning Departments. Each of these processes enabled both practioners and residents to be made aware of the natural environment. I would initially like to discuss briefly the River Valley Bylaw, a control mechanism developed "to protect the North Saskatchewan River Valley and Ravine System as part of Edmonton's valuable open space heritage and to establish the principles for future implementation plans and programmes for parks development".

The major goals of the North Saskatchewan River Valley Area Redevelopment Plan are:

1. to ensure preservation of the natural character and environment of the North Saskatchewan River Valley and its Ravine System,
2. to establish a public metropolitan recreation area,
3. to provide the opportunity for recreational, aesthetic and cultural activities in the Plan area for the benefit of Edmontonions and visitors of Edmonton,
4. to ensure the retention and enhancement of the Rossdale and Cloverdale communities in the River Valley.

Due to the existence of residential, transportation, public utility and institutional development within the River Valley, there will be greater development pressure for commercial and industrial uses as well as by civic uses such as public utilities and transportation plans. The "bottom line" is that these uses tend to be incompatible with the aims of nature preservation and parkland development identified within the River Valley bylaw.

In order to ensure that this sensitive environment is protected, the following policy was one of the major forces to be included within the bylaw.

Site Location Study and Environmental Impact Screening Assessment

"It is a policy of this Plan that all proposals for the development of a major facility that is publicly owned or is developed on public lands shall be subject to an environmental impact screening assessment as outlined in Schedule D, and a detailed site location study detailing costs, and social, environmental and institutional constraints which make a River Valley location essential must be prepared for Council approval. These studies shall be undertaken prior to Council committing funds for capital expenditure for the development of this proposal".

Major facilities include such developments as bridge crossings, storm and sanitary sewer upgrading, water treatment plant upgrading, trail development, driving range proposals, ski hill master plans, etc.

In 1980, the Parks and Recreation Department initiated the preparation of the North Saskatchewan River Valley and Ravine System Resource Management Plan. This implementation document to develop this natural parks system began during the development of the River Valley Bylaw. The need for a study of this nature was first identified in the Parks and Recreation Master Plan 1979 - 1983. The Master Plan recommended that a detailed plan of development in the River Valley and Ravines should be undertaken to protect the valley and minimize the threat that slumping, slippage and soil erosion pose to urban development. Another component that was also identified in the Master Plan was a comprehensive study of the environmental features within the River Valley to classify these lands into land management units.

The North Saskatchewan River Valley and Ravine System Resource Management Plan preparation was divided into three phases. The phases are as follows:

Phase 1 - Biophysical Inventory
Phase 2 - Resource Analysis
Phase 3 - Resource Management Plan

The first phase of the resource plan entailed the inventory of the biophysical characteristics of the River Valley. The data base consisted of biophysical components such as geology and geomorphology, soils, slope, vegetation, wildlife, aquatic life, historic and cultural sites, perceptual features and other relevant information.

The second phase of the plan consisted of a resource analysis of the valley and included an inventory of recreation data, user surveys, demand data, facility and programme inventory, analysis of the biophysical inventory in relation to the recreation data and the available physical resources and the determination of land suitability and land capability criteria.

The final phase of the plan is to include the goals and objectives through a public participation process, policies and guidelines related to the development, management and operation of the River Valley and the finalization of a short and long term resource management plan for the North Saskatchewan River Valley and Ravine System. As of this date only the first two phases have been completed.

The Development of a 'Natural Area'

Although few examples exist of the development or designation of a natural area within Edmonton, the closest example available is Mill Creek Ravine Park, a natural preserve area that required a re-establishment of its viable ecology.

The first step in the re-establishment of the ravine was to undertake an inventory of the biophysical characteristics and to identify any factors that would negate certain park development scenarios to be implemented. Once this was complete, a program statement was developed with input from the surrounding residential community and any user groups who made their views known to the planners. It is interesting to note that this process took almost two years to complete before any physical development took place. What follows is the program statement and planning objectives.

The area known as the Mill Creek Ravine will be protected as a natural preserve. The ravine will be developed as a pedestrian oriented nature park for the residents of the City of Edmonton to provide active and passive recreation that will be complimentary to the natural features of the ravine.

Planning Objectives

1. To develop a pedestrian oriented, nature park utilizing existing or restored resources to their best advantage to recreate a natural preserve area and re-establish a viable ecology while minimizing additional development contrary to the park's primary use.
2. To protect the natural environment by recognizing the unique natural features worthy of preservation for outdoor recreational, open space, interpretive, ecological, wildlife habitat, air and water quality enhancement and flood control purposes.
3. To develop a park taking into consideration existing land uses (i.e. neighbourhood residential, institutional, commercial), proposed redevelopment schemes (i.e. Gainer's) and existing or proposed land use policies (i.e. Richie Neighbourhood Improvement Plan, Scona East Area Redevelopment Plan, River Valley Bylaw Policy White Paper).
4. To introduce various environmental restoration programs such as the development of water management systems, reforestation, drainage control, pest and disease control, erosion control and stabilization of water channel banks within the ravine minimizing the scope of development necessary to adhere to the objectives of this program statement.
5. To provide an integrated trail system including hiking, jogging, biking and cross-country skiing within the ravine.

i) The prime consideration of trail development shall be to maximize access from all adjacent neighbourhoods and to provide accessibility to all areas of the park, where appropriate.

ii) Where appropriate, access and transportation of handicapped, senior citizens and young people will be considered in the detailed design of the park.

iii) Appropriate design elements to facilitate use by blind persons will also be incorporated into walkways, where feasible.

6. To develop an interpretive programme within the ravine utilizing community resources so that the natural and cultural history of the ravine can be explored by neighbourhood schools and nearby residents.

7. To extend generous pedestrian connections to Capital City Recreation Park trails over Connors Road and 76 Avenue, integration into City bicycle trails, re-establishment of the Y & PRR right-of-way from the north end of the Ravine to Argyll Park and inclusion of facilities for municipal recreation and educational programmes compatible with its primary use as a nature park.

This park was finally completed in late 1985, linking the south side of Edmonton to the downtown. However, with the majority of the western portion of the River Valley still largely underdeveloped, I feel this 'naturalization' process is only in its initial stages.

To elaborate on this topic further, I have identified some of the constraints and opportunities available to myself as a planner in the establishment of natural areas.

1) Constraints

- demand for this valuable parkland for other recreational functions such as major facility development and the twin arena complex,
- use of these natural areas for utility functions such as water treatment plants, gas/oil pipelines and LRT bridges,
- public perception of parkland (i.e. manicured, trimmed, ornamental garden style). Education is required so that the public will understand why the naturalization of the area is being undertaken.

2) Opportunities

- undeveloped river valley land,
- long standing use in existence of a naturalized area due to Parks and Recreation position in relationship to capital budget process and lack of money,
- education of the general public,
- availability of biophysical inventory,
- existence of the River Valley bylaw,
- smaller operating and capital budgets.

Author's Address:
Parks Planner, Edmonton Parks and Recreation,
Box 2359, Edmonton, Alberta, T5J 2R7.

5. Peter G. Lee

Abstract

If public groups/individuals are trying to convince government to establish natural areas, it is important to understand that there are at least four serious constraints to success. They include: powerful ideological opposition to their establishment; limited resources of the proponents for promoting establishment; the bureaucratic jungle of impediments; and the weak political stance taken by the proponents. In order to assist in partially overcoming these contraints, I suggest ten rules to follow when approaching government and examine in detail only one of those rules - develop clear objectives and strong arguments. The promotion of use is a non-issue except in terms of building public support which can help promote and manage natural areas. Management of sites to ensure long-term protection is a much more pressing, yet underrated issue.

I was asked to present the point of view of the public lands planner regarding:

1. my role and perspective in promoting the establishment and use of natural areas in an urban context and;
2. what constraints and opportunities exist.

Certainly the quickest and most effective way to establish natural areas is for the private sector, whether as individuals or as an organized group, to obtain direct maximum legal control over a site through ownership. As we all know however, this method has extremely limited applicability due to cost.

The other major alternative is to convince government to either designate existing public land for use as a natural area or to convince government to convert, through purchase, private land to public land for eventual designation as a natural area. There are some legal and limited fiscal opportunities available for both of these to happen. However, as many of you have probably already found out, it is not as simple a process as "Ask and Ye Shall Receive". There are often serious constraints to the establishment of natural areas which should probably be understood if a project is to be successful.

Constraints to the Establishment of Natural Areas

I think that even though there have been and will continue to be some successes in the establishment of natural areas, there is definitely powerful ideological opposition to their establishment and that opposition is widespread, consistent and vigorous.

At least superficially, that opposition seems to be based on overriding societal objectives of removing and preventing any constraints on fiscal profits and job creation and on minimizing public sector expenditures. In fact, in Alberta the change in our economic situation seems to have resulted in our social and economic objectives becoming one and the same. Conservation areas are often seen as an unnecessary and unwanted restraint on economic growth or at least a drain on the public purse. But more than that, they are often seen as sterilization of the land and its resource - as the creation of "dead zones" which reduces flexibility and eliminates future options for economic recovery and well-being.

All of us who work toward the establishment and management of natural areas, whether in the public or private sectors, are often led to believe that we have to make a trade-off between natural areas and economics whereas in truth, only rarely is the choice that simple. Frequently, the opposition is even blatantly stronger than making trade-offs. Even if you can prove that the establishment of a new area is not a trade-off, you must often also prove that its establishment will be a short-term asset to economic growth, meaning it will create jobs and material wealth.

This in many situations forces proponents of a proposed natural area to, as Aldo Leopold said, "invent subterfuges to give it economic importance". As a result, it is becoming quite in vogue for conservationists to argue economics in proposing new sites for protection. We even hear of trying to broaden the commonly understood definition of economics, which has been understood to include only commercial and fiscal factors, to include extra or non-market values. This is quite a challenge for non-economists, to try to change broadly accepted definitions.

Now, I have no argument against using all of the tools at your disposal in order to convince others that natural areas are worth establishing. The question is, what tools are readily at your disposal given the severely limited resources (i.e. time, money, expertise, etc.) which conservation interest groups and individuals have. This leads to the second most serous constraint. In my opinion, there is an absence of a sufficiently "squeaky wheel" in promoting the establishment of natural areas. Amateur or volunteer activists are at a serious disadvantage when they deal with full-time professionals from private business and the public bureaucracy. The professional is much better placed to understand and to manipulate the public policy process than someone who works a 5-day week and is involved in promoting natural area establishment on Saturday afternoon.

As well, conservation groups seem to find it difficult to meet the increasing demands which have been placed on them. These demands, which many groups seem to have tentatively accepted as a normal part of interest group politics, include:

1. less emotionalism;
2. more"hard" data and proof;
3. addressing the "how much is enough" complaint;
4. assuming total responsibility for the management of natural areas including bearing all management costs and;
5. maintaining continuing contacts with the bureaucracy and with members of the Legislature.

You would all rather be out enjoying your natural area than satisfying these demands.

This constraint of conservation group resources in short supply, is compounded by the third constraint I see. This can be portrayed as a bureaucratic jungle of impediments which confront the public. Whether it is real or perceived makes little difference. The combination of legal arrangements and government institutions and procedures is often perceived as an intentional maze of confusion set up to discourage public participation.

The fourth and last serious constraint that I see is the "wimpishness" and fragmentation of support for the establishment of sites. With some notable exceptions, proponents of establishment surprisingly often seem embarassed, weak, defensive and alone. As a result they are too easily labelled, put into a political box and filed away for future amusing reference.

What You Can Do

In order to assist in at least partially overcoming some of these constraints, I think the first thing that you can do is to realize that the establishment and long-term protection of a natural area is political. If this is correct, then the next thing you have to do is to decide whether to take a defensive or offensive political stance. In my opinion, defensive politics will likely not succeed. You should become more active in the day-to-day political process related to your cause in order to achieve success.

In order to do this, I have ten suggestions on how to successsfully approach government for the establishment and long-term protection of natural areas:

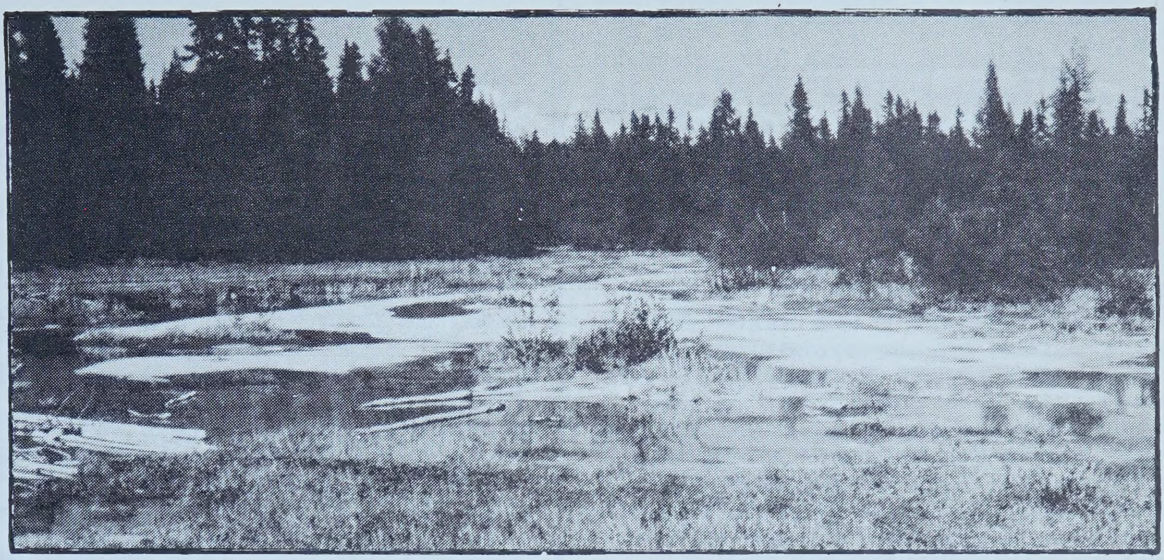
1. Develop clear objectives and strong arguments. Know what you want and why you want it. Don't leave it up to somebody else to interpret or decide for you.
2. Start early. Everything will take longer than you can possibly imagine.
3. Organize the necessary help. This usually includes local political and MLA support, cultivating friends in the bureaucracy and experts who can advise on technical matters (i.e. legal, economic, biophysical), as well as building up public support for your proposal.
4. Know the rules and who's in charge. Despite the difficulty of sorting through the bureaucratic jungle, you must know who is making the decisions and what the rules of the game are and whether you want to follow them or not.
5. Be prepared to work out conflicts yourselves. Be prepared to compromise but know your "bottom line" ahead of time. Reduce the confrontations and conflicts and portray the issue as a "winner" as much as possible. Do not back yourself into a corner.
6. Know when to speak up. Know when to bypass the bureaucracy and go to the top (i.e. contact the Minister). The corollary of this is perhaps equally as important - know when to shut up. If things are progressing to your advantage, do not interfere.
7. Second-guess the opposition. This will save valuable time, avoid setting a negative tone and diffuse conflicts.
8. Be prepared to let anybody and everybody else take the credit. Find out who needs the "brownie-points" the most and who can best help you the next time.

9. Know how to use the media. This includes not just for applying pressure but also for commending successes and the actors involved.
10. Be tenacious. Keep gnawing away at all the "red herrings" that get thrown in your way.

I will examine only a portion of the first rule briefly - the development of strong arguments. Ultimately, your reasons for pursuing the establishment of a site are based on some combination of values that you put on the site. It is critical that you define what those values are so that you will be able to keep on a true and straight course while lobbying. But it is at least equally necessary for you to define values of a site which may be important to decision-makers. Proponents of new natural areas often confuse developing strong arguments with defining their own selfish values of the sites. According to my value system, the values of established natural areas usually sound indirect, remote, nebulous and "motherhood" to decision-makers and hence my values probably have a practical political weakness. Very rarely are selfish arguments of real or perceived value of a potential natural area convincing to decision-makers. The only way to make it convincing is to ground it in ultimately selfish reasoning. As Garrett Hardin said: "never ask people to do anything they consider contrary to their own best interests". Everything is relative to the individual and value systems vary greatly between individuals. If a pickpocket meets a saint, all he sees are pockets. If you are trying to give that saint recognition and all the decision-makers are pickpockets, then you may have to argue for recognition on the basis of the saint's pockets and not on the more ethereal qualities which a saint possesses.

I am not in any way suggesting dishonesty: in the long run, I do not think it would work. As an illustration, several Research Natural Areas (RNA) programs in the Pacific Northwest - U.S., got into this trouble. Many RNA's were designated decades ago because their proponents argued for the need for research sites, when in fact often the ulterior motive behind their nomination for designation was for other reasons including rare and endangered species protection, aesthetics and outdoor recreation. As the years went by and nobody used many of these sites for research, the forest industry and many state and federal officials pressured for their dis-establishment under a "Use It or Lose It" argument. Even though initially it may have been more difficult, theirs and your purpose should be to identify the honest and durable reasons for establishing a new natural area.

To assist you in determining values for yourself and for the decision-makers there is much information around which describes values of natural sites and includes:
1. Recreation and tourism - is presently a very popular way of assigning value; although frequently legitimate, it is also easily inflated;
2. Useful products - is fairly saleable using the natural products in medicine, etc. arguments and genetic stock preservation values. This also includes undiscovered and undeveloped values;
3. Natural art - includes the clever "crown jewels" analogy (i.e. our natural heritage is analogous to Britain's crown jewels);
4. Religious - can be called the "Noah Principle" since Noah was commanded by God to include in his ark all living things, not just the spectacular or unique ones;
5. Moral - refers to the belief that conservation of natural sites is the right relationship between man and nature;
6. Spiritual - refers to the perceived opportunities natural sites give for rich, meaningful experiences;
7. Ecosystem stabilization - is usually not considered valuable, especially for small natural sites close to or within urban environments except for "corridor" or "habitat island" values;



The establishment and management of Wagner Natural Area, which features unique marl ponds shown here, provide models for potential natural areas in Alberta (Top Photo: Dave Mussel; Bottom Photo: Cliff Wallis).

8. Rare or endangered species protection - is a fairly fashionable value today;
9. Leaving options open - is probably not widely acceptable since these sites are often perceived as "dead zones";
10. Education values - are often saleable since visions of little children come to mind;
11. Scientific research and baseline monitoring - is a value for which very few sites are used and so probably has extremely limited applicability.
12. Fiscal/commercial values - are the most saleable but it is usually difficult to find ones that will be realized in the short-term. Where applicable, they usually include

recreation and tourism fiscal values.

Many of these values are related to each other and I am sure that you could think of several more. The point is to define those values of importance to you and to the decision-makers and then use these values as a basis for the arguments for protection.

Use/Management

Even though I was asked for my perspective on the promotion of use of natural areas, from my point of view this is a non-issue, unless the object is to build a constituency which can help to manage and support the long-term protection of the site. I've seen the "Loving to Death" problem that occurs in many nature preserves in the United States. Yorke Edwards stated the problem well:

> "The sheer numbers of people are turning formerly harmless recreation into destructive forces...a growing outdoor religion is served by a mass of detailed information on where to go to follow the trampling herd into the trampled wilderness. It is a poor bookshop today that does not carry titles guiding an army of polluting, disturbing people into back country... Dozens of book titles guide an even larger rush of humanity into the joys of munching and digesting their way through edible parts of the natural landscape...It makes no difference whether the people involved love (the features) or hate them. The effect is the same."

In general, there is no doubt that promoting use is not going to be a problem. Natural areas are similar to other market commodities, in that their use and hence value increases with decreasing supply. With increasing agricultural, commercial and recreational activity, the supply of unprotected natural areas is decreasing and the demand for formally established sites is increasing.

In considering the topic of promotion of use of natural areas, I think it is important to point out that there is probably no such thing as no use, only a spectrum of utilization intensity. Toward one end of the spectrum is the actual physical use which peple make of an area for hiking, photography, exercise, etc. Toward the other end of the spectrum are the non-physical uses of the area. For example, a study in Colorado on the value of natural areas showed that actual physical use ranked seventh in the reasons given by the public for protecting natural areas. The reasons for which the natural area was set aside will determine the uses that you may want to promote.

My concern lies more with controlling over-use and abuse of natural areas and in managing for appropriate uses. While establishment is an important action, it is merely a necessary but insufficient step in long-term protection. Management is almost always an underrated aspect in the long-term protection of sites.

One of the most effective management strategies that I know of is to promote, among the users, acceptance of what you consider to be appropriate uses of a site. There are many ways of doing this including:

1. have as few rules as possible;
2. be positive about the rules that you do have;
3. try to get users to directly accept responsibility (i.e. by involving them in the decision-making process; enter into legal agreements; etc.).

What I Can Do

I have lots to say on what you can do and not a lot to say on what I can do. Because the establishment of natural areas is a political issue, as a Natural Area government biologist and administrator, I see myself as having no independent role in promoting the establishment of Natural areas. My role is to facilitate the Natural Area interests of public groups and individuals in terms of their dealings with the bureacracy. My effectiveness in dealing with the bureaucracy on Natural Area issues is to a great extent dependent on your effectiveness as public interest groups and individuals. In general, the stronger your commitment, the easier my job will be and the greater chance for success.

I am sure my department would also like me to deliver the message to you that we encourage you to become actively involved in the management of Natural Areas. In terms of the specific Natural Areas Program for which I am responsible, we will attempt to accommodate your involvement in any way that suits your interests and the needs of the site. Presently there are four avenues that I am aware of that I can offer you in terms of management. They involve:

1. your obtaining a disposition such as a lease or license on a Natural Area;
2. your becoming a volunteer steward;
3. your being a member of a public advisory committee and;
4. your entering into a management contract with my department.

Conclusion

In conclusion, if you are interested in promoting the establishment of more and more natural areas, what I optimistically see you getting in our present system are small successes here and there - occasional new areas, incremental adjustments to existing areas and small improvements in government policies and procedures. The problems and constraints associated with new natural area establishment are great enough that I see no easy solution.

The best you can do to minimize the constraints is to realize how truly political the establishment of such sites is and then focus your energies and limited resources on those approaches to government which are likely to be effective. By using the right arguments the right way you will have had, whatever the outcome, the small, private satisfaction of doing the right thing.

References

Cooke, L.J. 1985. Economic values in integrated resource policies and plans. in: Economics and Ecology: The Economics of Environmental Protection, Symposium Proceedings of the Canadian Society of Environmental Biologists, Edmonton. pp. 169-180.

Edwards, R.Y. 1976. Old natural habitats: a vanishing heritage. Nature Canada July/Sept.:26-29.

Ehrenfeld, D.W. 1976. The conservation of non-resources. American Scientist 64:648-656.

Ehrlich, P.R. 1982. Human carrying capacity, extinctions and nature reserves. Bioscience 32(5):331-333.

Leopold, A. 1966. A Sand County Almanac. Oxford University Press, New York.

Livingstone, J.A. 1981. The Fallacy of Wildlife Conservation. McClelland and Stewart Ltd., Toronto.

Pachlke, R. Environmentalism: 'motherhood', revolution, or just plain politics. Alternatives:29-33.

Power, T.M. 1985. Economic valuation of the natural environment: profaning the sacred? in: Economy and Ecology: The Economics of Environmental Protection, Symposium Proceedings of the Canadian Society of Environmental Biologists, Edmonton. pp. 37-44.

Stanky, G.H. 1982. The role of management in wilderness and natural area preservation. Environmental Conservation 9(2):149-155.

Wallis, C.W. 1985. The extravagance of wilderness - whose values, whose dollars and sense? in: Economy and Ecology: The Economics of Environmental Protection, Symposium Proceedings of the Canadian Society of Environmental Biologists, Edmonton. pp. 45-51.

Walsh, R.G., R.A. Gillman and J.B. Loomis. 1982. Wilderness Resources Economics: Recreation Use and Preservation Values. American Wilderness Alliance, Denver, Colorado.

Wilson, E.O. 1984. Million-year histories: species diversity as an ethical goal. Wilderness:12-17.

Author's Address:
Natural Areas Manager, Public Lands Division, Alberta Forestry, Lands and Wildlife, 4th Floor, Petroleum Plaza, South Tower, 9915-108th St., Edmonton, Alberta, T5K 2G9

6. Donna Tingley

The Environmental Law Centre and Private Conservancy

I have been asked by your workshop organizers to speak to the question "how do we promote the establishment and use of natural areas in and around urban centres" from the perspective of a lawyer. I think that I can most effectively answer this by telling you about the Environmental Law Centre and how the Centre has been involved in private conservancy.

The Environmental Law Centre has recently published a small book called the "Conservation Kit: A Legal Guide to Private Conservancy" which I was involved in writing along with two lawyers who specialize in income tax law.

Throughout this presentation, I will be making reference to "private conservancy". I am referring to non-governmental ways of preserving land which conservationists personally feel is worth saving. Essentially, it is the efforts of individuals and groups who work to preserve land in the public interest.

Unquestionably, at this time, governments at all levels are the main force in the preservation of conservation lands through the establishment of parks, ecological preserves and wilderness areas. Naturally, many conservationists will focus their attention on governments, lobbying appropriate government authorities to designate new lands for protection. Others have turned to private conservancy.

Some have chosen this route because they are frustrated with existing government policies and priorities and want to take their own steps to conserve land to supplement existing government programs. Others want to become involved in private conservancy becasue of a desire to participate in community activities and to make a positive contribution to the conservation of land.

The Environmental Law Centre

The Environmental Law Centre was established in 1981. It is a charitable non-profit society with offices in Edmonton. There are three full time lawyers on staff at the Centre. The objectives of the Environmental Law Centre are to monitor environmental law and policy, to do legal research, to provide information to the public on environmental law, and to assist with referrals to legal counsel and other experts.

More specifically, the Centre has an extensive library which contains a wide variety of resource materials on all aspects of environmental law. The Centre publishes all of its research studies as well as a quarterly newsletter which contains articles on current environmental issues. The Centre has sponsored a variety of seminars, courses and conferences on environmental and natural resources law topics such as safe drinking water and the law related to toxic substances.

The Environmental Law Centre's Interest in Private Conservancy

Since the establishment of the Environmental Law Centre, a number of requests for assistance have been received from organizations who had, at that time, already established conservation areas. The organizations had acquired appropriate land, and were in the process of dealing with the management issues that face any landowner plus those problems associated more particularly with conservation lands. Although it was not always easy for them to find quick answers to their questions, it is fair to say that those organizations dealt very effectively with the legal problems which they faced in the establishment of their conservation areas.

When the Centre was approached by a large conservation organization which asked for an assessment of the legal alternatives for acquiring government land for a conservation area, it became apparent that there was a need for the publication of a manual which would address the legal issues associated with private conservation lands.

Once it was decided to put together this type of manual, it took almost a year and a half to raise the funds and to write and publish the material. Finally, in the fall of 1986, the "Conservation Kit" was complete.

Interest in Land Available for Private Conservancy

The workshop organizers felt that it would be worthwhile if I presented some of the information contained in the kit. What I will look at is the various interests in land which are available for acquiring conservation land. In my experience, many conservationists feel that the only real alternative is an outright purchase of the available land. However, other alternatives are available. The following is only a cursory presentation of those alternatives. Before anyone actually acquires land, they will need additional information on the full legal implications of their intended course of action.

To make any sense of this discussion, it is necessary to talk about the concept of the "bundle of rights". A non-lawyer can usually only identify one property right, that being "ownership". A lawyer, on the other hand, will talk about property in terms of a "bundle of rights". Why the difference?

Upon further reflection, the non-lawyer may concede that a number of people may have an interest in his land even though he calls himself the owner. For example, he may in fact own his land jointly with his spouse. His bank may have a mortgage registered against his property. He may have leased his basement suite to one tenant who has subleased it to someone else. He may also have granted a variety of licenses and easements with respect to his property.

All of these interest holders have an enforceable legal interest in the same piece of land. The difference is that the various interest holders will enjoy the rights in the land for different lengths of time and for different purposes. This is the "bundle of rights".

The first interest is a fee simple. It is what most people call "owning land". It is the largest interest in land which the law recognizes and is the closest thing there is to absolute ownership. It is out of the fee simple interests that lesser interests such as leases are carved.

A fee simple owner of land may sell his land or bequeath it by will. He has the fewest legal restrictions on what he may do with his land. Within the laws passed by the Legislature concerning such matters as zoning and pollution control, he may do anything that he wishes with his land. Because the fee simple interest in land gives the owner the greatest amount of control, it will be the most expensive to acquire. Initial acquisition costs as well as the cost associated with land ownership such as municipal taxation, may make fee simple ownership too expensive for many conservation groups.

A second important interest in land is the leasehold interest. Most people are familiar with leases. A lease creates an interest in land, but only for a set period of time, whether one month or ninety-nine years. During the term of the lease, the tenant has the right to the exclusive possession of the land. The Legislature has enacted legislation which governs the relationship between landlords and tenants.

A lease has many of the benefits of fee simple ownership, but a lower cost. In addition, a lease may be a useful alternative where the landowner is unwilling to sell the land, but is willing to lease it for a period of years. The disadvantage is that unless a lease is renewed, the land must be given up at the end of the term.

A less well known legal instrument is a license. A license is an agreement, either written or unwritten, which grants permission to enter onto land and to do something that otherwise would be considered a trespass. A simple example is where a landowner gives a visitor casual permission to enter his home. A license does not provide exclusive possession to land, and is generally not considered to create an interest in land.

A license will be of greatest value to those who wish to enter onto land to carry out a specific, limited activity and who want the legal authority to do so. For example a license might be obtained by a group sponsoring a one day cross-country ski event over the properties of a number of landowners.

The last type of legal interest which I would like to discuss is a restrictive covenant. Simply put, a restrictive covenant is an agreement between two landowners whereby one agrees to not use his land in a particular manner, thereby benefitting the other's land. The agreement then binds future owners of the land. For example, landowner A might promise to not develop his land so as to preserve B's scenic view. Once the agreement is made and properly registered, it will bind the future owners of A's land. A court order is required to remove the restrictive covenant from the land.

The restrictive covenant can be quite complex because there are a number of legal requirements which must be met before it will be considered valid. First, the covenant made between the two landowners must be negative in nature. Thus, the one landowner must agree to not use his land in a certain manner. Second, there must be two pieces of property involved, one which receives the benefit of the restrictive covenant, and the other to which the restriction is attached. In Alberta, because of a section in the Land Title Act, the same person may own both pieces of property. Lastly, there must be a relationship between both pieces of property such that the restrictive covenant will clearly benefit one piece of land.

An example of a potential use of a restrictive covenant might be helpful. A conservation group might own a nature sanctuary and wish to create a buffer zone around the property. As an alternative to purchasing the fee simple in the property, which would likely be very expensive, the group could negotiate a restrictive covenant with the owner of the neighboring property such that the owner would agree to keep it in an undeveloped state.

The "Conservation Kit" also deals with the issue of conservation easements. I do not plan to go into this technique as it is rarely used in Canada.

The "Conservation Kit" deals with one other issue which is relevant to the matter of establishing conservation areas and that is the income tax implications of donating land for conservation purposes. Once landowners have decided to donate property to a conservation organization, they will want to know how to transfer the land in a way which maximizes income tax benefits. Once a conservation area has been established, a new group of legal issues become important, including municipal taxation, occupiers' liablity, surface rights, fencing , trespass and the licensing of water use. These and other issues are dealt with in some detail in the kit.

As part of the Environmental Law Centre's education program, a one-day workshop will be held this fall to go through the legal issues associated with private conservancy. The workshop will be held in Edmonton, and will be co-sponsored by Wildlife '87. There will be speakers who can answer your legal questions and panelists who have had experience in setting up conservation areas who can talk about some of the practical issues associated with private conservancy. Information about the workshop can be obtained from the Environmental Law Centre.

Author's Address:
Staff Counsel, Environmental Law Centre, #202, 10110-124 St., Edmonton, Alberta. T5N 1P6.

Urban Natural Areas in the Future

David Spalding

It has been a very interesting day and we have heard a lot of very interesting things. The traditional advice given to a beginning interpreter is "You tell them what you're going to tell them, then you tell them, and then you tell them what you've told them". My job is to tell you what you have been told. I am not going to try to repeat what everyone else has said. Instead, I shall try to pull it together under various headings; try to take it a little further, build in some of my experience and add some of the things I have heard informally between sessions.

Somebody said to me today at coffee - "I hear you're going to be the raconteur" - so I had better start with a story. I could start with a bit of a bang and tell you about the time that somebody dropped a bomb on me. It was a very large, high explosive bomb. I was two years old at the time, in the city of Sheffield in England. Fortunately the bomb did not go off, but it did cause me to travel across Sheffield in the middle of the blitz. Of course there were many bombs that did go off, the net result of which was my growing up in an environment full of bomb sites. There are still some such sites around; you saw some of them earlier during the talk on the English experience. To me these were very magical places. When I started wandering around on my own, at age five or six, one would always detour through the bomb sites. All the rubble had been knocked down and this wonderful plant was growing there. It was the plant we call fireweed and it grows, as you well know, in disturbed places, particularly after forest fires. Someone had grown it in Kew Gardens in England. It escaped from Kew because it grows perfectly well in England and it became established in the bomb sites. Of course to me, these wonderful things with the great red, rosy flowers on top were really quite a magical experience. I had my first natural history experiences right in the middle of a city in a place where somebody had done their very best to disturb it and succeeded!

I mention this because I think it has given me a slightly different perspective. What I have heard today, is that some Canadian naturalists are trying to come to terms with the fact that urban sites can be really quite important. If I had grown up in Calgary with the mountains at my back door, I would find it very difficult to take urban sites quite so seriously too. But I spent the first 30 years of my life doing a lot of natural history with a coal mine on one side and a canal on the other. Yet, there was some very wonderful natural history. In fact, one of my strongest memories of England is standing in Trafalgar Square, in the middle of London at rush hour, with traffic roaring all around me and starlings on every ledge. Every bird on every building was making so much noise that they were drowning out the traffic. Starlings are a bit resented here, and quite rightly so, but in their own homeland they can be quite a remarkable natural thing.

I think that the naturalist's consciousness is changing a little bit, and I think we have to carry on taking some of these new perspectives. As we heard, the Edmonton Christmas Bird Count recorded several thousand Bohemian Waxwings around the city yet Jim Butler told me that on the Elk Island Christmas Bird Count only one was seen. I wonder how many of you think of Edmonton as a sanctuary for Bohemian Waxwings, but that is what it is every winter. It's a place where people have planted the right trees and where the birds come by the thousands, and they like it a lot better than Elk Island National Park. So do the Merlins.

I would now like to offer a little historical perspective. One of the very strong things that strikes me is that initial conservation efforts were made by individuals. Urban natural areas were saved or were brought to people's attention because of such individuals, like Kerry Wood in Red Deer, Helen Schuler in Lethbridge, and Charlie Bird in Calgary. It was innovative individuals and leaders who, often alone (as Kerry Wood was for many years), took the initiative to keep prodding people and saying "this place is important".

Kerry Wood wrote a book about the Gaetz Lake Sanctuary. He was its official warden from the age of 14 and he has lived to see a nature centre named after him and the area finally preserved. One of the depressing things about that whole history is that after Gaetz Lake was recognized as significant, it took 40 to 45 years for someone to actually put a fence around it and say "This is important and we're going to save it". Lots of people tried, but it took all that time. It has been an uphill struggle, but we went from individuals to informal groups, to organizations; from local to provincial to national efforts. The efforts of naturalist groups working together have been very worthwhile and an awful lot has been done.

We have come a long way and as evidence of that I recall a conference in 1974 on Urban Natural Areas in Canada, at which I gave a paper about local urban areas. It is very interesting to go back to it because it is a little time capsule of where things were at. I was very pleasantly surprised to see today how much has happened since that date. At that time there were no naturalists working for any city in Alberta. Today, nearly every speaker has had some sort of professional connection with an urban nature centre or civic department. Just the fact that we have a body of solid professional people doing these sorts of jobs is a remarkable change. No longer must a naturalist's group prod a city council alone; we have a complex network of associations. (We just saw Gerry setting up a connection with Edmonton city planners right before our very eyes).

This sort of network is important, but we can still look forward to the time when virtually every citizen is aware that urban natural history is important. One thing we heard strongly from the States and Britain, is that in areas where there are larger populations and where there has been a lot more environmental damage in the earlier years, public consciousness has reached that stage. If anyone tried to demolish an Audubon centre in one of the big eastern cities in the United States, I bet two-thirds of the population would be down on the politicians like a ton of bricks. These things have earned their value, they are seen as important by very many people. So it is not an unreasonable goal for us to move to the point where most of the citizens, of our larger urban centres at least, are aware that urban natural history is important.

The other trend that we have seen along the way is the growing confidence of naturalists. We have already talked about not selling ourselves short. We are past the stage when people were very apologetic, when they thought they were only pushing their own special interests and were really quite embarrassed about the whole thing. Yet they did not want to see that stand of Douglas firs knocked down. I think we have reached the point now where we can say we are doing society a favour. We are the white mice, if you like, in the coal mine. We are sensing the damage of destruction before other people notice it, and we are trying to stop it. Ten or twenty years down the road the bulk of our citizens may be ready to say "thank-you".

I would now like to look at some fundamental questions. I have been sitting and listening and saying "why should we take urban natural history seriously?" - (playing the Devil's advocate, if you like). I have jotted down reasons. Firstly, most naturalists live in cities. Secondly, most of the general public live in cities. These are the people who are not just concerned about the city but who also vote in politicians who support or oppose wilderness areas and developments in national parks. Our whole environmental consciousness is rather dependent upon what takes place in cities. A third reason it that cities are where nature lives. We have heard some remarkable instances of birds, plants and mammals that live in places that you or I would perhaps not initially expect. In the limited time I spend in my own very suburban backyard in Edmonton, I have had nighthawks on the fence and a Townsend's Solitaire in the shrubbery. I am sure these sightings happen often but most people do not notice.

I was reminded of another reason for concern in a conversation I had the other day with an architect about the Winter Cities Program. Some of you may know that there is a lot of thinking and discussion taking place regarding the winter cities, the ones that, six months of the year, have a pretty cold and unpleasant climate. Essentially we have to come to terms with winter and not spend it either going to Hawaii or wishing we could. I think we have things to learn in the city from these various urban developments. We heard about Kestrels living on hamburger in Britain. That is nature adapting to man, and it's happening all the time. Evolution is taking place before our very eyes and it is much more striking than some of the adaptations and changes that take place in the countryside. Likewise people are adapting to nature. The huge membership of that Hedgehog Society is an example of people suddenly learning to take something new seriously. That is at least a social adaptation even if it is not genetic. Such things are worth studying. What makes people like natural history and get involved in it? I have read an awful lot of natural history yet very little about this. Nobody has taken the question seriously.

What kind of natural areas should we be looking at? We have heard today about all kinds - about ones that are almost real wilderness areas and about little fragments containing really special things. We have also heard about the opposite extreme, such as the Kestrel happily rearing its young on a window ledge, with a very urban landscape in the background. We are concerned with a great diversity of natural areas in the city that can be used for recreation or education, as well as conservation. We are also talking increasingly about connections. Connections between natural areas and the countryside and connections between those natural areas and the most urban segments of the city. It should be possible for a bird to go from right downtown into a park, then into a natural area and out to the country without having to make a great effort. As long as those corridors exist, they will bring the more mobile wildlife, at least, - the weeds and the birds - into the cities.

How are urban natural areas created and managed? We've heard some good things about that. Leadership is very important and we have been lucky, we have had some really good leaders develop from the natural history movement. We should also bear in mind, however, that it is possible to train and develop leaders too. Maybe we should be looking to a leadership program within the natural history movement that would give people some of these skills and make them realize their own potential. Business spends a lot of time and money on training leaders and government is starting to do the same. We not only need those motivated leaders, we need an understanding of the procedures. I think we need to establish the principle that natural areas are important. We need to assess where natural areas fit into such things as the Planning Act and the Conservation Strategy. Unless we establish the importance of natural areas in people's minds they will be ignored when real life decisions are made.

One of the things that disturbed me most was a passing remark by the planner from Edmonton who said city council has removed the requirement to have an environmental impact assessment done for a major development in the city or in the river valley. That sort of thing should concern us. We should be knocking on doors and asking questions. If there is a requirement to have a public hearing before a natural area is changed then we have a chance to marshal some support. Even in these times of restraint, there are funding programs available which we may be able to adapt or bend in order to create, maintain and manage natural areas.

We have heard about management plans for established natural areas answering such questions as 'What are you going to use it for?' 'Who is going to be allowed in?' 'Who should do research?' 'Who should be allowed to picnic or travel through?' 'What sort of brush clearing do you do?' 'Do you simulate natural burning?' 'Do you bring back the buffalo?' These are the kinds of management problems that you have to look at when managing a natural area.

Will there be Urban Natural Areas in their future? (Photo: Gerry McKeating).

One interesting aspect of today's discussions is the way much of it fits in with what is starting to be called "new environmentalism". This sort of third wave of environmentalism is not reactive but proactive. Instead of trying to stop pollution, the effort goes towards planning to stop it from developing in the first place. We are trying to work with planners, architects and others in recognizing each others needs. We have to get in at the beginning and, as one of the speakers said, allow plenty of time.

We can also congratulate ourselves on the great level of sophistication shown today. It's no longer a matter of saying "there's my bunch of trees and I'm going to stand in front and nobody's going to run their bulldozers through". We are getting past the stage where we need the grand gestures at the last minute.

One thing that has only been referred to indirectly is the business of marketing natural areas. It may be a rather distressing term but during the last five years, as a business man rather than a public servant, I have had to learn the concept and techniques of marketing. I have become very aware that if you do not market, you do not survive. Consequently, we need a marketing plan for natural areas overall and for every individual natural area we are concerned about. We have to think about what people need to know about an area, who needs to know, what their concerns are and what things may cause misunderstanding. Our wildlife speaker mentioned some of the dumb questions he gets over the phone from the public, but that is the level the public is at. You cannot give them a list of scientific plant names and expect them to be impressed. You have to start at their level if you want to convince people that an area is significant. We are talking values as well as facts. You have to look at emotional and motivational messages as well as informational ones. Just think of the thousands sitting in front of their T.V.s who will never come out to a natural area, no matter how tempting it may be because they are a bit frightened of them. Maybe their kindergarten teacher explained how dangerous it was to go down into natural areas! We have to decide for each audience what we want to tell them, how we are going to tell them and how we are going to get around those barriers. We certainly need to look at teachers and at politicians, but we should also consider our opponents. There has been some fairly strong talk about the people who oppose us, yet when it comes to developing natural areas, the guy who is busy developing the shopping mall in your favourite woodland, is also the guy who likes to take his kids to the park on the weekend. If you explain it the right way, he may begin to realize that the woodland is the place somebody else takes their kids to. A lot of these people are quite approachable. For example, I am presently working with tourist specialists that know nothing about natural history. I told them that the Whooping Cranes north of Saskatoon may actually represent money to them. It never crossed their minds. They did not even know the birds were there, yet it is one of the two places in North America where you can just about guarantee seeing Whooping Cranes. I told them that this was the only international resource they had.

We have got to get at the professionals and they are already ready for the message. A lot of people are now talking about environmentalism. They might not understand it terribly well, but they at least know that they should be aware of it and that they should be supporting these things.

How about the new residents in our cities? What a wonderful chance to get at people who are just moving in, slip a leaflet in the Welcome Wagon. Tell people that there is a natural history program every week down at your Nature Centre.

To pull this together, let me suggest a few strong directions that I see coming out of today's workshop. On a provincial basis the first thing to do is to gather the data. There is a lot of data. We know what plants grow in lots of places, but I am thinking of the sort of data that we can use to market urban nature. I have been sitting at the back asking questions about the audience every time somebody talked about their program. To me it's terribly significant that 10,000 people have seen a video about the Peregrines in Calgary, because those are people that (we hope) have been turned on. Those are impressive statistics; statistics that can help you gain support for your programs. You need to know what things infuence people. Tourism people need to know about these things, planners need to know about these things, politicians need to know - give them the statistics.

We need to look at how much natural area we have got in each urban space and then relate it to the size of the city and the population to start to establish standards. We can identify target cities that have very little protected. We then need to assess priorities - the places that are threatened and unprotected. It is not difficult to do and there is a huge network of resource information available. If we are dealing with a new city like Spruce Grove, there are plenty of experienced people in Calgary or Edmonton who can go in and help people there. We need to find leaders in some of those places. We need to initiate action and since, as has been very forcibly pointed out, we have relatively limited resources, we need to focus those energies. Once an issue is solved, if possible, move on to the next job. We also need to be continually developing better networks. Why not go and talk to the Chamber of Commerce for example. Find out how they feel about these things, tell them about the problems, show them some of the audio-visuals we had last night. Most importantly, and I think this was underlined by Donna Tingley very stongly, we need to be looking for the most cost-effective options. It may be great to raise half a million dollars to buy a natural area, but we cannot always afford to do that. If we can accomplish the same goals by persuading the city to manage an area our way or by arranging an easement for a token fee, then why not try it? Perhaps we do not need to buy it every time.

In addition to developing the network, however, we need to protect and use what is already there. We need to be very concerned about these sites, and we need to document that use. If a thousand people go to a site, we should know. We need to market all the sites; that can be used by publication, by hot lines. We need to create events that make news - if you make a good story, the newspaper will print it.

I would like to finish up with a very brief story. This weekend, I am staying with the president of the Calgary group. At breakfast time, when I asked if there was anything useful I could do, she gave me a large pile of paper and I stapled some of the newsletters that some of you have been reading. Needless to say, a new crisis had arrisen, in this case with a piece of bald prairie known as Nose Hill. Nose Hill has been documented as an important site for a number of years, yet it is still in danger. We must remember that, because we live in a democracy, situations, legislation, local bylaws and people continually change. The person you convinced about an important site last year is going to move on to another job and may replaced by somebody who has never heard of nature. You have to be eternally vigilant. As I said in a paper in 1974, "The only long term security for natural areas in our society is the support of a large number of people who demand, as part of the quality of their lives, easy access to unspoilt natural beauty within their cities". Thank-you.

Author's Address:
Vice-President, Kanata Heritage Research and Presentation Corporation 18504-85 Ave., Edmonton, Alberta, T5T 1A7

Bird Watchers of Point Pelee National Park, Canada

Their Characteristics and Activities with Special Consideration to their Social and Resource Impacts.

James R. Butler
Gregory D. Fenton

Abstract

Point Pelee National Park, Canada, is one of the most famous locations in the world for watching spring passerine migration, drawing at the present time 80,000 gate visits of spring bird watchers to its unique and fragile resource base. A University of Alberta research team examined the social and ecological factors associated with this user group through on-site interviews, participant observations, and trail measurements. This data, representing over 2000 bird watchers, documents a wide range of sub-typologies, differential use characteristics and impact parameters.

Pelee birding is a highly intensified activity with birders spending an average of 9.8 hours each day, during an average visit of 4.6 days. This study found no significant relationship between high densities of park visitors and user dissatisfaction. Factors which were shown to contribute to dissatisfaction among bird watchers included environmental disturbances by other birders and conflicts with other user groups. Factors which contributed to satisfaction included friendliness of other birders and related sharing of birding information and sightings.

Although birders at Point Pelee are highly educated, with 59.7% of those interviewed holding the minimum of a bachelor's degree and 16.9% holding doctorate degrees, they also have a high negative impact on the ecological resources of the park resulting from off-trail excursions in pursuit of birds. Forty-three percent of vegetation damage was a result of marginal trail viewing, 27% caused by exploratory impact, and 18% was caused by pursuit behaviour. Resulting unofficial paths accounted for 62% of total trail length in the study area.

Potential management implications, as they relate to Point Pelee National Park, are presented and discussed.

Background to the Study

Bird watching is probably the fastest growing wildlife recreation activity in North America (Butler 1984; Harrison 1979). Participation in Canada and the U.S. has increased from combined estimates of eight million in 1965 to participation currently of twenty to thirty million people each year (Kellert 1985; Filion et al. 1983; Lyons 1982; U.S. Bureau of Outdoor Recreation 1967). Conservative estimates of economic expenditures associated with bird watching in North America are in excess of twenty billion dollars annually (USDI 1982; Filion et al. 1983) with the major field guides alone collectively selling about one million copies a year. Despite the popularity and visibility of this activity, the participants themselves are generally poorly understood, and subject to substantial misconceptions. As a consequence, their needs and expectations are often poorly accommodated in recreation settings.

Bird watching has traditionally been seen as a nonconsumptive wildlife-related recreation activity in which there is little or no impact on the natural resource base. In the past ten years, however, in specific locations the activity has begun to place stress on both the birds and associated habitats (Graham 1979; Webster 1980; Wilkes 1977). In addition to concerns about ecological impact, the question of social impacts has arisen, especially with planners and managers placing increasing emphasis on experiential objectives in an attempt to ensure the provision of a quality recreation experience. Accordingly, there is a need to understand the satisfaction and motivational variables associated with birding and how they are affected by the increasing numbers of people participating in the activity. The ability to address some of these issues depends upon the success of achieving a better and more thorough understanding of the specific user group. This is also important from a wildlife conservation standpoint as bird watchers are seen as being representative of the new principal wave of wildlife guardians and a sophisticated political force who will continue, for the foreseeable future, to be the leaders in the North American conservation movement, a role formerly held by sporthunters through the early half of the century (Butler 1984).

Study Location

Point Pelee National Park is a day-use park located in the southern part of Essex County in southern Ontario, 80 kilometers southwest of the large urban centre of Windsor-Detroit (Figure 1). The National Park is a 15 kilometer sandspit formation extending into the western basin of Lake Erie. With a total area of only 16 square kilometers, 29% of which are drylands and 71% freshwater marsh, Point Pelee is one of the smallest national parks in the Canadian Park System.

Bird watching as a recreation activity at Point Pelee has been growing steadily in popularity since the turn of the century, when noted ornithologists P.A. Taverner, Wm. Brodie, and Wm. Saunders drew the attention of the Great Lakes Ornithological Club to the Point Pelee spring migration. As of 1985, 332 different species of birds have been recorded; a paradise for the bird enthusiast.

Point Pelee National Park has become one of the most famous locations in the world for watching the migration of birds during the spring months of April and May (Harrison 1976). Presently, some 60,000 to 80,000 gate visits of bird watchers are recorded during the spring passerine migration each year, involving more than 20,000 individual visitors. On a busy day during the peak of this migration 6,000 people can be found within the confines of the park's 6.2 square kilometer landbase. Of these, 70% (4,200 individuals) can be found at any one time in the Tip Area (an area of only 1.5 square kilometers at the end of the peninsula).

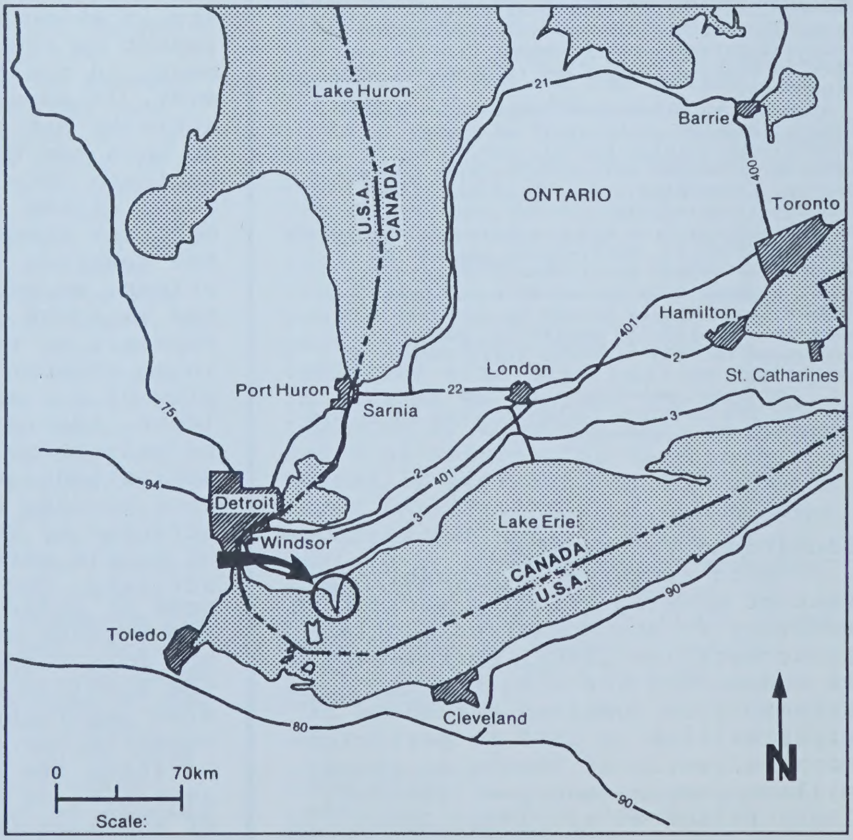


Figure 1.

Point Pelee National Park in its regional context.

Environmental impacts are of special concern at Pelee since the park falls within the northern limits of a Canadian threatened ecosystem called Carolinean. This forest ecosystem, with its associated plant and animal communities once covered most of southern Ontario. Over the past 200 years, clearing of hardwoods for timber and draining of wetlands for farmlands has eliminated most of Canada's Carolinean Zone. Point Pelee encompasses sixteen square kilometers of this remnant forest ecosystem, an ecosystem which includes the northernmost limits of plant and animal species found nowhere else in Canada.

Various studies have been carried out that deal with the impacts of recreation activities on both vegetation and wildlife (Boyle and Samson 1985; Liddle 1975; Ream 1980; Wall and Wright 1977). Few however, have attempted to deal quantitatively in predictive terms with the specific issues associated with the combined social and ecological influences of an expanding base of appreciative user clientele. Those efforts which have attempted to address the ecological implications of birding activities (Parks Canada 1982, 1978, 1977) have focused largely on short-term management solutions, without an adequate data base to understand or even predict, in qualitative terms, the relationships and consequences of alternative levels, types, and patterns of use on both the immediate environment and the experience of the participants.

Methodology

A full range of social and ecological considerations are required to understand the true complexity of the birder management issue at Point Pelee. This study reports on the initial phase of an exploratory investigation which focused on a data assembly of bird watcher profiles and attitudes, and addressed considerations of social carrying capacities and ecological impacts.

Three basic methodologies were involved in the field research which took place during April and May, 1985 at Point Pelee National Park. The first was an on-site interview methodology using a formalized personal interview format to gather a wide variety of information regarding bird watcher profile-demographics, birding activities, previous birding experience, and user attitudes and preferences as they pertained to the birding activity and other birders at Point Pelee. The second was a non-interview methodology which included unobtrusive participant observations of bird watcher activities as they related to offtrail impacts, resource familiarization, and selected types of visitor interactions. The third methodology involved systematic trail measurements which attempted to qualify the extent of vegetational impacts prior to and following the birding season. The statistical techniques used to analyze and test the data were conventional ones obtained from SPSSX (Statistical Package for the Social Sciences).

Results

General Characteristics of Pelee Bird Watchers:

Total sample size for the interview questionnaire portion of the study was 1005 bird watchers of which 53% are male and 47% female. Their educational attainment is significantly higher, on average, than that of the general population of both Canada and United States. Of bird watchers interviewed at Pelee, 59.7% held a bachelor's degree or greater. Only 7.1% of the general public in Canada and 14% in the United States hold a minimum of a bachelor's degree (Statistics Canada 1984; NORC 1981). In addition, 14% of Pelee bird watchers held masters degrees, and 15.9% of those interviewed held doctorate degrees. No other recreational user group, to the best of our knowledge, represents a higher profile of educational attainment.

When asked for residential backgrounds, 69.4% of those interviewed said they came from urban backgrounds. A majority of visiting birders (50%) had jobs that are classified by the U.S. General Social Survey Occupational Classification System (NORC 1981) as professionals; 13% were retired and 6% were students. Bird watchers visiting the park came primarily as families (39%) or as groups of friends (37%). The average group size was 3.67, although this ranged from individuals to organized groups of more than twenty people. Forty-seven percent of Point Pelee's bird watchers appear to visit from the United States; 48% are Canadians, and 5% are visiting from other countries, especially the United Kingdom, Germany, and Holland which comprise 58% of the overseas visitation.

Sixty percent of the bird watchers interviewed were members of at least one bird club. In some cases they were members of as many as seven different clubs. In comparison with non-bird club members, bird club members visiting Point Pelee during the spring did so more often in the past (4.1 times), spent longer periods of time in the park during each visit (31% or 1.6 days longer), and spent more time each day in the pursuit of birds (3.6 hours).

Bird photographers were classified into three distinct categories on the basis of equipment in possession. Only 29% of visiting birders at Pelee were photographers. Of these, 24% were snapshot photographers, 54% were classified as general bird photographers (described as having a 35mm camera with a lens adequate for bird photography), and 6.8% were advanced photographers. For all photographer types, the average number of pictures taken per person per day was 55. If this average is converted to a total number of pictures taken by all photographers visiting Point Pelee for the month of May alone, some 1.7 million photographs were taken at a total economic expenditure of $710,000 Canadian for film and development alone.

Birding at Pelee during the spring migration is a highly intensified activity with each bird watcher spending from 1 to 22 hours per day in the pursuit of birds. Males spend 6% longer birding, on average, than do females. While the difference is only 35 minutes per day, it is significant. The average birding day at Point Pelee National Park last 9.8 hours, of which time is frequently spent both in the park and in the surrounding area, often beginning before first light and continuing until after dark in the evening. The highly committed bird watcher who visits the Pelee area for extended periods of time in the spring (i.e., 3-10 days) spent 11% (2.5 hours) longer birding each day than those who visited the park for only 1-2 days. The average length of stay for visitors to Point Pelee was 4.6 days. Photographers however, stayed up to 15% (.73 days) longer, on average, than did non-photographers. The visit length also varied significantly by photographer type with advanced photographers staying 46.5% (4 days) longer than non-photographers. General bird photographers stayed 10% (.5 days) longer than the overall average. Most birders at Point Pelee National Park are repeat visitors with 80% of those interviewed saying that they had been to the park at least once in the past. The average number of previous visits was 12.

Bird watchers visiting Point Pelee during the spring migration have considerable past birding experience with 78% stating that they had been actively birding for five or more years. The average amount of previous birding experience among the Pelee bird watchers was 14 years. Those people who had birded in excess of 60 days the previous year spent significantly longer in the park and the surrounding area each day (averaging 9-22 hours) than those who had less than 60 days of previous birding experience (averaging only 1-8 hours).

When birders were asked if they had been to the visitor centre on the particular day that they were interviewed, 81% said that they had been through at least once. Bird watchers used the visitor centre as a major source of information regarding rare bird sightings and the location of these bird sightings within the park. Birders returned to the visitor centre two and three times each day just to find out if any new or rare bird species had been seen or listed.

During the interview questionnaire birders were asked to respond freely, in a unstructured format, to four questions dealing with personal perceptions and opinions. The first question asked birders what it was that they liked about other birders at Point Pelee National Park. The variation in responses was great with 28 different ones being categorized. Numbers of individual responses per birder ranged from one up to seven, with the average being two. The most common responses were that birders were friendly (36% of the total) followed by the related response that other birders share birdinginformation and/or sightings (33% of total). When asked what they disliked about other birders at Point Pelee, only 34% of the sample population provided responses with 20 different responses being categorized. Forty-one percent of respondents were concerned that some birders caused environmental disturbances (e.g., flushing birds and offtrail use), 22% said that some birders were too competitive (e.g., listing, aggressive behaviour); and 20% said that some birders were inconsiderate (e.g., noisy and/or anti-social).

When asked what they liked most about birding at Point Pelee National Park birders gave 56 different responses. Sixty-one percent said that they liked the variety and number of bird species, 10% said that they liked the park environment (e.g., clean, fresh air; variety of habitats), and 8% said that they liked the facilities (e.g., trails, nature centre, train). When asked what they liked least about birding at Point Pelee, birders gave a total of 40 different responses. Of the 42% of the

Bird watchers, in contrast to listers, tend to make extended periods of reflective, almost solitary fixation on single birds (Photo: Gerry McKeating).

sample who provided responses, 44% made negative reference to other visitors (e.g., crowds, noisy people, novice birders, other user groups), and 18% had concerns of a facility or operational nature (e.g., campground booking problems, quality of concession food).

Ecological Impacts of Bird Watching on the Pelee Environment:

The ecological impact portion of the research study at Point Pelee was to measure and quantify the types and extent of offtrail use by bird watchers. Unobtrusive participant observations (n=412) were made of birders in the field in a randomized site and time sampling design.

Observations indicated that a majority of bird watchers left designated trails at least once each day, with the average being 112 times per individual. Offtrail excursions lasted up to 20.7 minutes with the average being 6.1. This time of being off the designated trails varied significantly as to whether or not the birder was a photographer. While a majority of the offtrail use (77% of the total) can be attributed to non-photographers, photographers spent 41% (3.5 minutes) longer, on average, off designated trails than did non-photographers. Offtrails duration also varied by photographer type, with advanced photographers spending 56.5% (7.0 minutes) longer off designated trails than either snapshot or general bird photographers. Birders other than photographers were observed to travel up to 300 meters offtrail with the average being 12.3 meters. Advanced birders, as classified through knowledge levels and experience, travelled up to 61% farther (15.7 meters) off trail, on average, than either novice or general birders.

Whether or not birding activities resulted in deliberate or inadvertent flushing of the bird or birds under observation was also recorded. Of the 412 individual observations, 25.5% resulted in flushing. Although the effects of flushing disturbance on spring migrants, who are already potentially stressed, are not well understood, it is known that even low amounts of visitor harassment can potentially alter behaviour patterns and influence the reproductive and survival rates of bird species (Wall and Wright 1977). When birds are grounded at Pelee by adverse weather phenomenon they tend to be weak and particularly susceptible to becoming stressed through harassment, yet that situation is also the one most anticipated and preferred by birders for viewing and photographic opportunities.

Wilson's Phalarope female during spring migration (Photo: Edgar Jones).

Observation results also showed that 95% of offtrail excursions resulted in plant damage. The specific response of plants to recreation use is strongly related to the morphological characteristics of the plant species being affected (del Moral 1979). Since the plant species in the understory of the Carolinian forest ecosystem at Point Pelee are highly sensitive, especially during spring growth, birder offtrail impacts may be of significant concern, and potentially may result in short and long-term changes in species composition and density.

Five different categories of offtrail bird watcher impact were recorded at Pelee during the spring bird season. Forty-three percent of all observations were classified as margin viewing impacts caused by the casual stepping off of trails or boardwalks to better observe bird species in the immediate trail corridor. Exploratory impacts accounted for 27% of the total and are caused by extended, purposeful offtrail exploratory travel in the search of and discovery of unseen bird species in the understory vegetation and in the tree canopy. A category termed pursuit impacts accounted for 18% of the total and are a result of birders leaving designated trails in the active pursuit of a highly desired bird species. Pursuit behaviours are governed by factors of stimulus overload whereby concentration upon the primary stimulus (the desired bird) overrides secondary concerns of environmental sensitivity, despite an awareness of and familiarity with potential impacts. An anticipatory anxiety to observe the desired bird and the synergetic group dynamics which accentuate the overall enthusiasm also contribute to this behaviour. People passing stationary birders fixed in observation and blocking the trail accounted for 6% of the total offtrail impacts, while wet trail displacement, which accounted for another 6% of the total offtrail use, are a result of birders skirting wet and/or flooded portions of trail.

Unofficial paths formed through offtrail use by bird watchers accounted for 62% of the total trail length in the study area south of the visitor centre. These paths amounted to 6.75 kilometers in length, while only 4.15 kilometers of trail length in this area can be recognized as official designated trail. Total area impacted through these undesignated paths amounted to 2700 square meters (.27 hectares). This total length and the resulting area lost to unofficial path formation is of potential concern in Pelee; however, in perspective, the impacts or loss of park area to development such as the paved bike trails which parallel the road is much greater. Random samples of trails measured before the birding season were made again four weeks later at the end of the spring season (n=15), to determine the extent of trial widening and/or new trail formation. While some widening and new trail formation did occur, it was not as substantial as had been hypothesized. Average increases in trail width amounted to 6.5 centimeters while decreases in percent cover averaged 5 centimeters. Margin viewing along the boardwalk at the tip was responsible for the greatest increases in trail width over the study period. These impacts represent a 400% increase in trail width from only 25 centimeters on either side of the boardwalk before the birding season to 100 centimeters on either side after birding season. Very little, if any new secondary trail formation (unofficial paths) occurred in the study area, although vegetation impacts caused by individual wanderings were readily discernible.

Birder Knowledge and Familiarity with the Flora and Fauna:

The resource familiarization portion of the unobtrusive participant observation study was designed to test bird watcher knowledge and familiarity with the park resources. Test species included birds, plants, insects, reptiles and amphibians and were chosen randomly as they were found in the field by the recording participant observer. When selected participants (n=168) were asked for the general (common name) of the species under observation, birders could provide it 57% of the time, but they could only provide a resonable follow-up of some natural history information 29.2% of the time. It was surprising how little is known about park flora and fauna beyond its common name. The ability ot answer the general and specific questions correctly was found to vary by sex with males answering the questions correctly 68.2% and 35.5% of the time respectively, as compared to only 36.1% and 18.1% for females. This ability was also found to vary significantly with age of male birders being questioned. The younger the male visitor to Pelee, the more likely they were of answering the general or specific question correctly. Such a correlation was not as evident in females. The higher knowledge rating of young male birders over older male birders is supported by general observations made in recent years by the park staff and is reflective of expanded enthusiasm in young people for bird watching. The little-old-lady-in-tennis-shoes caricature is a highly outdated image for the modern bird watcher.

As would be expected, visitors knew the bird resource best; they correctly identified 56% of the birds during the field quiz. Insect resources (mostly common butterflies) were next best with respondents overall obtaining a score of 39%, followed by reptile and amphibian species with a score of 37% correct. Visitors were least familiar with the plant resource (mostly common wildflowers), scoring only 28% correct during the field quiz. The low interest in and unfamiliarity with plant species of birders in general may well be a contributing factor to the high levels of impact on the plant community as a whole.

The Influence of Crowding and Density on Visitor Satisfaction:

As high levels of visitor density are evident in Pelee during the spring season, especially on selected weekends, a portion of the research study was directed at obtaining a better understanding of the potential influence that Pelee's trend toward increased popularity and expanding visitor numbers is having on the bird watcher population. An interview question asked birders (n=1005) to respond to the numbers of people present in the park that day in accordance to a modified likert scale. With the response categories preset, 56% stated that the number of people present was just right, 34% reported that there were too many, and only 6% stated that there were far too many. The second question asked bird watchers whether the number of people present in the park that day detracted from their enjoyment of the park and its resources. Sixty percent responded no, while 40% said yes, the number of people present did detract from their enjoyment.

No significant relationship between actual density and perceived crowding was found for birders at Point Pelee National Park when daily gate counts were correlated with visitor responses. In fact, contrary to the results of many recreation studies examining this same relationship (Lee 1975; Herberlein and Vaske 1977; Absher and Lee 1981; Ditton et al. 1982), the findings at Pelee tended to suggest that as use level increased, birders were less likely to evaluate the experience as crowded ($r^2=-.25$, p=.245).

Findings similar to those of Vaske et al. (1980) were obtained when examining the perceptions of crowding by past and more recent visitors. Those birders who felt that there were far too many or too many people present in the park had been to the park significantly more often in the past than those who felt there were too many or that the number was just right (52% and 65% more respectively).

When examining the relationship between the two questions dealing with bird watcher perceptions of crowding at Point Pelee, it is interesting to note that while 18.3% of the total interview sample said that there were too many or far too many people in the park, 30% of these said that the numbers did not detract from their enjoyment. This finding tends to support the theory that perceptions of crowding are not solely dependent upon visitor density, but is affected by density in conjunction with other factors such as visitor expectations, preferences and past experience (Grammon and Burdge 1984; Bultena et al. 1981; Shelby et al. 1983). Positive forms of social interaction (willingness of others to share knowledge, information, etc.), wich were recorded as being among those things birders like most about other birders at Pelee, may offset any potential negative impressions imposed by crowding factors, in the same way that it would be a lonely baseball game if only a few scattered fans were sprinkled throughout the baseball stadium.

Bird Watcher Sub-typologies

Preliminary observations of different bird watcher sub-groups or sub-typologies were made over the study period. As a user group, bird watchers have been highly oversimplified in the past, being perceived and grouped simply as "bird watchers". The results of a preliminary assessment indicate at least 25 distinctly different birder sub-typologies, each using the same resource simultaneously, but with a range of different objectives and expectations, some of which conflict with expectations of other sub-typologies. Such considerations are important, for experiential management purposes, in the reduction of conflict and for the provision of an improved range of services targeted at specific preferences.

Sub-typologies generally stratify themselves in accordance with their approach to birding, their social structure, and their experience expectations. A few of the more common bird watcher sub-typologies include hard listers, bird watchers whose primary goal is to observe as many different new and/or rare bird species as possible. There are watchers, in contrast to listers, that can be classified as either aesthetic watchers or advanced watchers. Both types of watcher activities involve extended periods of reflective, often solitary fixation on single birds once they have been located in the field. The difference is that the first observe the birds largely in an affective context for their aesthetic qualities (e.g., colour), while the latter view or record observations in a cognitive context (e.g., behaviour, food habits, etc.). Family bird watchers include nuclear or extended family units who carry out the activity in a closed discovery and sharing mode for the benefit of the children and the general strengthening of the family unit itself. Courtship bird watchers use the birding activity as a courtship pattern where birding is of secondary importance to the pair participation. Courtship birders are distinctly different as well in the context of whether or not each participates because of a shared interest in the resource. Photographers can be divided into the three separate sub-typlogies presented previously, but even here their photographic objectives and approach offer further sub-divisions. Social bird watchers are another prominant sub-typology who visit the park primarily for the purposes of meeting and interacting with others of like interest, with the birding activity being of secondary importance. The development and refinement of a sub-typology matrix for the bird watchers of Pelee is currently under development.

Discussion and Management Implications

The foregoing data represent a preliminary and initial attempt to describe and understand the social-demographic and activity characteristics, attitudinal variables, and social and ecological impact variables of bird watchers at Point Pelee National Park. The investigation was an exploratory one providing a basis upon which other more focused studies can be carried out both at Point Pelee National Park and in other locations. The implications for the management of bird watchers are many if, indeed, the relationships observed hold true. Some of the potential implications as they relate to Point Pelee National Park include the following:

The data indicate that a wide spectrum of visitor groups utilize the resources at Point Pelee during the peak birding season of April 25 to May 20, and while bird watchers are the primary user group (80 to 90% of the total), other general user typologies such as fishermen, bicyclers, joggers, swimmers, picnickers and school groups frequent the park throughout this same time period. As a result of this diversity of visitor use, asymmetrical antipathy conflicts arise. Asymmetrical antipathy conflicts are a special kind of user dissatisfaction arising from common use of resources by distinctly different user groups and where in the interaction, one group is more negatively affected than the other. In the Pelee framework there exist two different kinds of asymmetrical antipathy. The first we refer to as typological asymmetrical antipathy, the one-sided conflict that arises between different typological user groups (e.g., bird watchers and fishermen). The second is sub-typological asymmetrical antipathy, the one-sided conflict that arises between bird watcher sub-typologies (e.g., watchers and hard listers). When discrepancies exist between desired goals and actual outcomes, for both typological and sub-typological user groups, overall satisfaction declines. The extent of the satisfaction decline is influenced by the degree to which various user groups perceive each other as dissimilar (Graefe et al. 1985).

Study results suggest that both types of conflict occur at Pelee. When asked what bird watchers like least about birding at Pelee, 5% of those who responded (n=798) volunteered that they did not like other user groups being present in the park, specifically fishermen and school groups. This figure portrays typological asymmetrical conflicts and is probably much higher than the above figure may suggest as other observations, overheard comments, and casual reported comments suggest a much higher frequency of occurrence. The second type, sub-typological asymmetrical antipathy, showed up in the results obtained by asking bird watchers what they like least about other birders at Point Pelee. Of those who responded (n=534), 21.9% said that they did not like the competition associated with listing; 5.6% said that they did not like photographers, and 40.6% said that they did not like the environmental disturbances caused by photographers, listers and organized groups of bird watchers.

Study results suggest that most bird watchers do not mind the large numbers of people present at Point Pelee each day. This may be because new generations of bird watchers appear to expect and be tolerant of greater numbers of birders and that older generations of birders redefine their expectations over time. It is likely that user satisfaction, at least presently, will remain reasonably high despite the changing character of the recreation experience and that use limits may not immediately need to be set on a social basis. An exploratory interview conducted with bird watchers at nearby Rhondo Provincial Park suggested that some displacement due to crowding is already taking place.

Impacts associated with offtrail use will never be eliminated completely, but of the measured resource impacts by birders, a majority (54%) may theoretically be reduced or eliminated through considerations of improved facility design. Wet trail displacement accounted for 6%

of the total and could be decreased substantially through the construction of boardwalks or trail fill in the areas where these impacts occur. Trial impacts associated with passing people and margin viewing account for 49% of the total and could be reduced by widening existing boardwalks and by creating viewing nodes. These viewing nodes would allow birders to step aside, out of the way of other boardwalk traffic, and at the same time facilitate bird viewing.

An additional 45% of the impacts (27% as exploratory and 18% as pursuit impacts) should theoretically be reduced through behaviour modification measures implemented through improved public education and of acknowledgement by the individual as an agent for potential impact. This would probably take the form of on-site interpretive signage, expanded exhibit content, and specialized interpretive pamphlets addressing the preferences of sub-typology users (e.g., photographing birds at Pelee). The higher education level of the user audience under review suggest that birder compliance with offtrail regulations would be greatly enhanced if the reasons for a restriction are provided (Hendee and Catton 1968). More highly educated users tend to evaluate the validity of a regulation based on their personal assessment of whether or not they agree with it. During the course of the study, one trail closure sign wich gave no reason for the closure, was shown to have 18% non-compliance among bird watchers. When non-compliers were clearly evident on the closed trail beyond the sign, non-compliance rose to 50%.

For park managers faced with the decision of establishing use quotas and defining appropriate ecological and social conditions, the findings of this study reaffirm the need for establishing a clearer definition of the kind of recreation experience a site such as Point Pelee should provide. A major shortcoming of most management plans is the lack of measureable objectives that allow managers to explicitly state the conditions they seek, in terms of measurable standards of appropriate ecological and social conditions, and to measure performance with regard to achieving these standards (Hendee et al. 1978).

While the current management objectives at Point Pelee, "to minimize the environmental impact while optimizing visitor experiences and educational opportunities" (Parks Canada 1982), are a good beginning, they lack specific definition to facilitate effective decision-making. Studies such as this one can provide the baseline information required for setting these evaluative standards. Resource use can then be monitored through future related studies so that changes in use impacts, both social and ecological, can be recognized and management steps can be taken to facilitate or mitigate these changes. The integration of social science criteria, combined with resource management criteria, is seen as increasingly essential to the management of the experiential and ecological regime of Point Pelee National Park.

Bird watching at Point Pelee National Park is increasingly being recognized as a world-class experience. This is further re-affirmed by the fact that the majority of the birding visitors during the spring birding season (52%) are not Canadian. The Pelee experience, which combines elements of its natural setting, the social interaction of people with like experiences and interests, and the thrill of observing an unequalled birding resource, are reflective of the national role the park maintains in a systems perspective of other Canadian National Parks. It is essential to recognize the uniqueness of the Pelee experience in spring and to acknowledge in a global systems perspective that the primary experiential emphasis during that month of the year should be on birding, minimizing the factors which potentially diminish that experience (e.g. typological asymmetrical antipathy), and maximizing the factors which enhance the experience.

References

Absher, J.D. and R.G. Lee. 1981. Density as an incomplete cause of crowding in backcountry settings. Leisure Sciences 4(3): 231-247.

Boyle, S.A. and F.B. Samson. 1985. Effects of non-consumptive recreation on wildlife: A review. Wildlife Society Bulletin 13(2): 110-116.

Bultena, G.L., D. Field, P. Womble, and D. Albrecht. 1981. Closing the gate: A study of backcountry use limitations at Mt. McKinley National Park. Leisure Sciences 4(3):249-267.

Butler, J.R. 1984. The myths, the reality, and the challenges of managing for the non- consumptive wildlife user. In Proc.: Symposium on the Management of Nongame Species. Univ. of Kentucky, Lexington, Kentucky. pp. 127-135.

del Moral, R. 1979. Predicting human use impacts on high elevation ecosystems. In Proc.: Recreation Impacts on Wildlands. USDA Forest Service, PNW Region. Seattle, Washington. pp. 298-303.

Ditton, R.B., A.J. Fedler, and A.R. Greafe. 1982. Assessing recreational satisfaction among diverse participant groups. In: Forest and River Recreation: Research Update, Univ of Minn., Agriculture Experiment Station Misc. Publn. 18. St. Paul, Minn. pp. 134-139.

Filion, F.L., S.W. James, J.L. Ducharme, W. Pepper, R. Reid, P. Boxall, and D. Teillet. 1983. The importance of wildlife to Canadians. Can. Wildl. Serv., Environ. Canada, Ottawa. 46 pp.

Graefe, A.R., J.J. Vaske, and F.R. Kuss. 1984. Social carrying capacity: An integration and synthesis of twenty years of research. Leisure Sciences 6(4):395-431.

Graham, F. Jr. 1979. The case of the ugly birder. Audubon 81(4): 88-100.

Grammon, J.H. and R.J. Burdge. 1984. Crowding perception determinants at intensively developed outdoor recreation sites. Leisure Sciences 6(2):167-186.

Harrison, G.H. 1976. Roger Tory Peterson's dozen birding hotspots: A guide to the 12 best locations in North America for amateur bird watching. Simon & Shuster, New York. 288 pp.

Heberlein, T.A. and J.J. Vaske. 1977. Crowding and visitor conflicts on the Bois Brule River. Technical Report WIS WRC 77-04. University of Wisconsin, Madison: Water Resources Centre.

Hendee, J.C., G.H. Stankey, and R.C. Lucas. 1978. Wilderness Management. USDA Forest Service Misc. Pub. No.1365. Wash., D.C.

Hendee, J.C. and W.C. Catton. 1968. Wilderness users... What do they think? American Forests (September, 1968).

Kellert, S.R. 1985. Birdwatching in american society. Leisure Sciences 7(3):343-360.

Lee, R.G. 1975. The management of human components in the Yosemite National Park Ecosystem (Yosemite, California: The Yosemite Institute). 134 pp.

Liddle, M.J. 1975. A selective review of the ecological effects of human trampling on natural ecosystems. Biol. Conserv. 17:17-36.

Lyons, J.R. 1982. Nonconsumptive wildlife-associated recreation in the U.S. Identifying the other constituency. Transactions of the 47th North American Wildlife and Natural Resources Conference, Portland, Oregon, March 28, 1982. pp. 667-685.

National Opinion Research Centre. 1981. 1980 U.S. General Social Survey. Wash., D.C.

Parks Canada. 1982. A study of trail development during the spring bird season. Ontario Region, Point Pelee National Park. 22 pp.

Parks Canada. 1978. Resource management plan for birding activities at Point Pelee National Park. Natural Resource Conservation Division, Ontario Region, Cornwall, Ontario. 92 pp.

Parks Canada. 1977. Effects of birding on park natural resources. Natural Resource Conservation Division, Ontario Region, Cornwall, Ontario. 23 pp.

Ream, C.H. 1980. Impacts of backcountry recreation on wildlife: An annotated bibliography. USDA Forest Service General Technical Report INT-81. 62 pp.

Shelby, B.B., T.A. Heberlein, J.J. Vaske, and G. Alfano. 1983. Expectations, preferences, and feelings of crowded in recreation activities. Leisure Sciences 6(1):1-14.

Statistics Canada. 1984. 1981 Census of Canada. Ottawa, Ontario.

U.S. Bureau of Outdoor Recreation. 1967. The 1965 survey of outdoor recreation activities. U.S. Department Interior, Bureau of Outdoor Recreation. 202 pp.

United States Department of the Interior. 1982. 1980 National survey of fishing, hunting, and wildlife associated recreation. Washington, D.C. 152 pp.

Vaske, J.J., M.P. Donnelly, and T.A. Heberlein. 1980. Perceptions of crowding and resource quality by early and more recent visitors. Leisure Sciences 3(4):367-381.

Wagar, A. 1974. Recreational carrying capacity reconsidered. J. Forestry 72:274-278.

Wall, G. and C. Wright. 1977. The environmental impact of outdoor recreation. University of Waterloo Press, Waterloo, Ontario. 70 pp.

Authors' Addresses:
Dept. of Forest Science, 817 General Services Bldg., Univ. of Alberta, Edmonton, AB T6G 2H1

F.A.N. NEWS

The 1988 Annual General Meeting will be held in Red Deer in January. The meeting will be a joint conference on the Alberta Conservation Strategy, co-sponsored with the Public Advisory Committee to the Environment Council of Alberta. Further details are provided in a brochure accompanying this issue of the Alberta Naturalist. Or for further details, you may contact the FAN office in Edmonton at 453-8629, or write to the FAN address.

Integrating Man and Nature in the Metropolitan Environment is the title of a new National Institute for Urban Wildlife publication. The book published in 1987 constitutes the proceedings of a national symposium on urban wildlife, held November 4-7, 1986, in Chevy Chase, Maryland. It contains 47 tables, 25 illustrations, and a wealth of information for wildlife biologists and other natural resources specialists, landscape architects, planners and others interested in urban, suburban, and urbanizing areas. Thirty-nine papers are organized under the following six session headings: (1) Man and Nature in the Metropolitan Environment: A Challenge in Creative Conservation, (2) Urban Planning to Benefit Wildlife and People, (3) The Extension Dimension: Public Support and Education, (4) Landscape Architecture and Wildlife Habitat Design, (5) Urban Wildlife Research and Management and (6) Policy and Programs: How We Work Together and Who Pays. To order copies, send a cheque or money order in U.S. funds for $25.00 per copy to National Institute for Urban Wildlife, 10921 Trotting Ridge Way, Columbia, MD 21044, U.S.A.

PRAIRIE ENDANGERED SPECIES WORKSHOP PROCEEDINGS

One-third of all the rare, threatened, and endangered species were once regular inhabitants of the prairie grasslands. Ploughing of native prairie for agriculture has virtually eliminated the grassland on which these species depend. With this background, a three day workshop was held at the Provincial Museum of Alberta, Edmonton in January 1986 by the Federation of Alberta Naturalists. During the 32 sessions, 90 speakers from 30 organizations discussed the conservation and management needs of endangered prairie habitats and wildlife. Proceedings from the workshop are now available.

The Proceedings include 83 papers on endangered habitats and most threatened and endangered wildlife in the three prairie provinces. The papers on habitat confirmed that over 75% of all prairie habitats have been ploughed, grazed or urbanized. Over 95% of mixed grass prairie has been irreparably disturbed. The papers on individual species discussed the status of each species, its current management, the need for a recovery plan, and future conservation needs. A number of low profile species such as the bull trout, leopard frog, and a variety of insects and plants were included in an effort to stimulate more conservation activity.

To order copies of the proceedings of the Workshop on the Endangered Species in the Prairie Provinces, Occasional Paper No. 9 (1987) of Provincial Museum of Alberta send $10.00 per copy to Edmonton Natural History Club, Box 1582, Edmonton, Alberta T5J 2N9. Make cheques payable to Edmonton Natural History Club.

****

COSTA RICA

FEBRUARY 12 - 23, 1988

Nearly 800 species of birds.

More than 630 are resident.

Approximately 2000 varieties of orchids.

Your chance to see the long-tailed silky flycatcher, emerald toucanet, violet sabrewing, fiery-throated hummingbird, scarlet macaw, blue dancis, resplendent quetzel, blue-crowned chlorophonia and hundreds more — all in the company of a professional guide.

Truly a Naturalists Paradise.

EXTENSIONS AVAILABLE — LIMITED SPACE.

For more information WRITE or PHONE.

China Panda Tours
No. 6, 1470 Water Street
Kelowna, B.C. V1Y 1J5
(604) 763-0400 or
762-3594

The Alberta Environmental Directory - Second Edition

An annotated listing of 116 organizations and agencies involved in environmental issues, services and activities in Alberta. Compiled and Published by the Pembina Institute.

- Alphabetical index
- Index according to the type of organization
- Index by environmental issues or topics

Listings provide:

- address and contact information
- nature and structure of the organization
- purpose and aims and a brief overview of the major environmental services and activities provided
- information resources available.

100 pages, 8 1/2" by 11" cerlox bound, easy to use, typeset format. : Prices include postage

$10.00 for non-profit organizations, schools and libraries ($8.00 each for 3 or more)
$25.00 government and corporations ($15.00 each for 3 or more).
All proceeds go to a special fund with the Alberta Environmental Network for a third edition.

Order from: The Pembina Institute,
Box 839 Drayton Valley, AB TOE 0M0 -
Phone: 403-542-6017

F.A.N. Membership Fees Are: Regular $15 per year; Supporting, $25 or more per year (with excess over $15 being deductible from your taxable income). This entitles you to a subscription to the Alberta Naturalist. Subscriptions to the Alberta Bird Record are $10 per year. If you wish to receive both publications, cost is $23 per year. Please check the appropriate box.

F.A.N. MEMBERSHIP -- Regular Member ☐ For ____ Year
(ALBERTA NATURALIST)
Supporting Member ☐ For ____ Year

ALBERTA BIRD RECORD ☐ For ____ Year

Total Enclosed $__________

NAME ____________________________________

ADDRESS ____________________________________

____________________ POSTAL CODE ____________________

SEND TO:
FEDERATION OF ALBERTA NATURALISTS
Box 1472, Edmonton, AB T5J 2N5

MAR 10 1988

ALBERTA NATURALIST

CAMROSE LUTHERAN COLLEGE
LIBRARY

Volume 17, Number 4, Winter 1987.

Blue Jay. (Photo: Edgar T. Jones)

ALBERTA NATURALIST

Volume 17, Number 4, February 1988.

Published quarterly by the Federation of Alberta Naturalists
Box 1472, Edmonton, Alberta T5J 2N5

CONTENTS

Operation Ground Owl.
Colin Weir......................149

Alberta Native Plant Council - A Profile.
J. Derek Johnson................152

A Puffin Called Rosemary.
Doris Hopkins...................155

Unusual Behaviour of Northern Flickers.
Elizabeth Hall..................156

Alberta Christmas Bird Counts, 1986.
Andrew Slater...................157

FAN News, Notes and News, Announcements, Club News 165

Recent Publications on Alberta Natural History. 177

* * * * * * * * * * * * * * *

The Alberta Naturalist is published quarterly by the Federation of Alberta Naturalists. Special issues may be published from time to time. Any material printed for the first time in the AN may be reproduced without permission; credit lines will be appreciated. All opinions expressed are those of the authors concerned and, except where stated, do not represent official F.A.N. policy.

ADVICE TO CONTRIBUTORS

Items for publication should be addressed to the Editor at the address below. Deadlines for submission of material for regular issues are: January 1, April 1, July 1, and October 1. All material submitted for publication must be typed, double-spaced, preferably on 8½"x11" paper. Maps, charts, and graphs should be submitted in "camera-ready" form if possible. Photographs accompanying an article should be submitted in the form of black and white prints on glossy paper. (Prints can be made from supplied colour slides or negatives if necessary.) Illustrative material will be returned on request. The author's name and a complete mailing address must be provided with the submission of material. Contributors should be aware that articles of a technical nature and those involving the sightings of rare species, range extensions, out of season records, etc. may be sent out for peer review. A complimentary copy of the issue in which a submission appears will be sent to authors. Information on advertising rates may be obtained from the Editor at the FAN Box No.

DEADLINES for FAN project reports are: *Alberta Christmas Bird Counts*, January 30, Andrew Slater, 152 Oakside Circle S.W., Calgary, AB. T2V 4H2; *May Species Count - Plants, Birds and Mammals*, July 15, J. Derek Johnson, Northern Forestry Centre, 5320 - 122 St., Edmonton, AB. T6H 3S5; Compiler cooperation is greatly appreciated.

Editor: Derek Johnson,
7109 - 106 St., Edmonton, Alberta T6E 4V5.
Telephones: 436-8231 home, 435-7306 work.
Assistant Editors: Dick Dekker, David M. Ealey

Executive Assistant: Rose Kinequon
Printing: Percy Page Centre

ISSN 0318-5440. Postage paid at Edmonton, Alberta under Second Class Mail Registration No. 3604.

Operation Ground Owl

Colin Weir

Ninteen eighty-six was the first year of a three year program designed to study the Burrowing Owl in Alberta. The objectives of this study are:

1. to identify key areas used by existing breeding populations,
2. to determine the status of the Burrowing Owl in Alberta, and
3. to suggest future policies for habitat protection and species management to ensure the protection of existing and future populations.

To aid in achieving these objectives a work plan was initiated which included three main tasks:

1. A public awareness campaign encouraging the public to report active nesting sites,
2. Follow-up communications with respondants, and
3. Field work; verifying reported sightings, meeting land owners and banding owls at nest sites.

This report presents the activities and results of the first year of Operation Ground Owl and suggests some recommendations for the second year.

Public Awareness Campaign

Locating the nesting sites of Burrowing Owls is very difficult compared to other raptor species because their underground burrows are indistinguishable (at a distance) from those of burrowing mammals. Also, their nesting distribution is highly unpredictable and their breeding season is quite short. To collect the large number of observations required to determine the owl's breeding distribution is virtually impossible given the project's extremely limited resources of manpower and finances. Thus, public participation in areas such as nest location is critical to the success of this project.

Public promotion of Operation Ground Owl was accomplished using several media, including radio interviews, newspaper articles and the distribution of flyers (which were designed to resemble old west 'wanted' posters to appeal to the rural public). Many flyers were also mailed directly to people in less populated areas. Using these methods the first year of our public awareness campaign was very successful. The cooperation of the media resulted in a great deal of coverage which was obviously well received by the public. The most cost-effective method was found to be the direct mailing approach. Of all responses received from the public sixty percent resulted from the mailing of these flyers.

The public used several avenues for reporting active nesting sites. Fifty percent of respondants contacted their local Fish and Wildlife office, forty-eight percent contacted the project coordinator directly and only two percent reported their sightings by mail. These figures, combined with the opinions voiced during discussions with some respondants, indicated that perhaps all sightings should in future be reported to local Fish and Wildlife personnel. They are a group familiar to most residents and are always available.

The most important part of this public awareness program was the relationship cultivated with the respondants. Not only will they continue to act as field observers but they will certainly promote this project amongst their friends over the next two years. In appreciation of this support a database on all respondants has been set up. All those who reported nest sites will receive a thank-you letter describing the project and promoting the project's sponsors as well as a photograph of a pair of Burrowing Owls at a nest site. In addition to encouraging public participation the widespread publicity incurred additional benefits: public education with respect to the status of the Burrowing Owl, promotion of wildlife conservation in general and publicity for the project's major sponsors.

Field Work

The majority of the field work in 1986 was concentrated in the short grass prairie region south of the Red Deer River and as far east as the Suffield Block. A total of 191 nest sites were reported for this region and also for some areas located north of the Red Deer River.

During the months of July and August seventy-one of these nest sites were verified and all were found on native grassland, with the execption of one discovered in a cultivated field. Every nest has produced young and all 240 juveniles were banded. The largest brood contained nine juveniles. The farthest west a confirmed breeding pair was located was in the Fort McLeod/Granum area. Surprisingly few sightings were reported from the Manyberries/Lost River Ranch area in the extreme southeast corner of the province. Discussions with range managers in this area failed to yeild nest sightings within the Pinhorn and Sage Creek grazing reserves, however, three sites were confirmed near the Agricultural Research Station at Onefour. Just because there were so few sightings does not necessarily indicate the absence of a breeding population. There just are not as many people living in this area as elsewhere. Another factor affecting this low number of nest sightings was the height of the grass. Unusually abundant rainfall last summer meant that nest sites were more difficult to detect.

Areas that showed particularly positive results were Warner, Vauxhall/Enchant, Milo/Lomond, Brooks and Bassano. In addition, thirty nest sites were confirmed in the Drumheller area by Dan Wood and there are the forty unverified sites north of the Red Deer River. Fifty unconfirmed sightings south of the Red Deer River will need to be verified.

Although Burrowing Owls are known to nest in colonies none were found during the first year of this study.

Conclusions and Recommendations

Considering that this was the initial year of the project and its public awareness campaign the results to date are quite encouraging. By implementing the suggested amendments outlined below it should be possible to set a realistic goal of 400 verified nesting sites. The recommended amendments include the following:

1. Continue with the existing public awareness campaign but over a wider region, thereby increasing the size of the study area.
2. Emphasize the use of local Fish and Wildlife offices as places to report nest sightings.
3. The addition of more field personnel to verify reported nest sightings north of the Red Deer River.
4. Because field workers found that banding Burrowing Owls was both time consuming and labour intensive, we should de-emphasize banding and place greater priority on verification of active nesting sites.

Acknowledgements

The following people and groups should be acknowledged for their support in making this project possible and for their assistance during the field studies.

Alberta Fish and Wildlife: Doug Culbert, Gary Erickson and Dave Moore (Habitat and Nongame Management Unit); Duane Radford and Lorne Russell (Lethbridge Regional Office).

World Wildlife Fund Canada: Monte Hummel (pres.), Steven Price (v.p. Conservation) and Miles Scott-Brown (exec. coordinator Wild West).

Federation of Alberta Naturalists: for publicizing Operation Ground Owl in the Alberta Naturalist, and its many members who reported nest sites.

Canada Post Corporation: for permission to display the flyers in rural post offices.

Author's Address:
P.O. Box 1711, Lethbridge, Alberta T1J 4K4.

Burrowing Owl. (Photo: Edgar T. Jones)

Alberta Native Plant Council—A Profile

J. Derek Johnson

Purpose--to provide a provincial forum to promote knowledge and conservation of native plants and vegetation of Alberta.

Objectives

1. to co-ordinate information and activities on native plants in Alberta.
2. to educate government, industry, and individuals on native plants, their management, and protection.
3. to encourage research on native plants.
4. to develop conservation actions for the preservation of natural habitats and plant communities.

Membership and Base of Support

The ANPC will direct its efforts through persons with interests in ecology and the natural sciences. The activities of the ANPC will extend to educational and research institutions, government, industry, and the general public.

Operating funds will be obtained via subscriptions and donations. Specific research projects may be funded through applicable granting programs of government and various foundations.

Structure

--an Associate Member of the Federation of Alberta Naturalist.
--open to any individual or group which supports its aims.
--Members: invited to attend all meetings of the Council as a whole, and may vote on all matters.
--Observers: invited to attend meetings and participate in all ways but voting. Permanent observers are invited to all meetings, and others may be invited to attend or give presentations for special issues as appropriate.

Members and observers will receive information from the Council regularly.
--subcommittees of the Council may be formed and disbanded as needed for particular tasks or functions.
--the Executive Committee of the Council consists of the Chairman, the Vice-chairman, the chairmen of each subcommittee, the Secretary, the Treasurer, a FAN representative, and a Government Liaison.

Action Plan

--the Council will initially concentrate on rare plants in Alberta as a priority project.
--as the Council's membership and interests grow, the number of

Smooth Sweet Cicely (*Osmorhiza longistylis*).

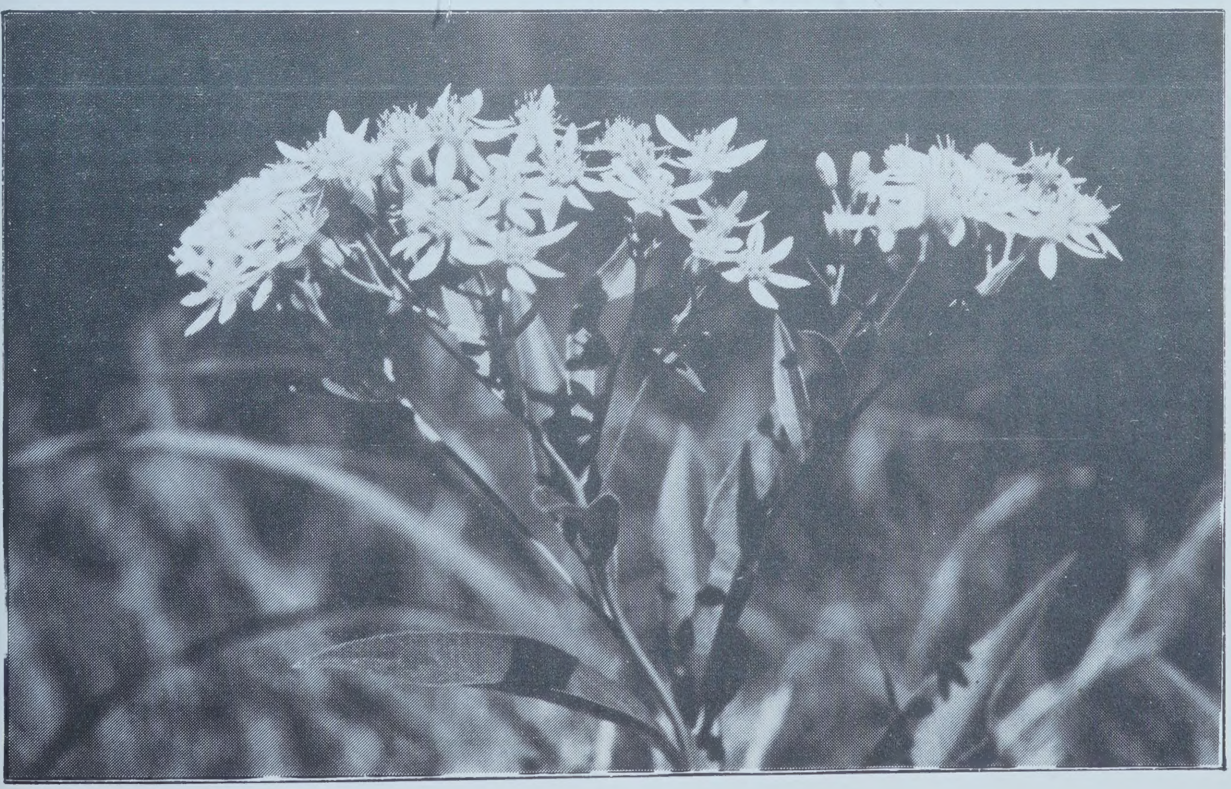
activities which the Council can support will also expand.
--other priority activities are outlined below.

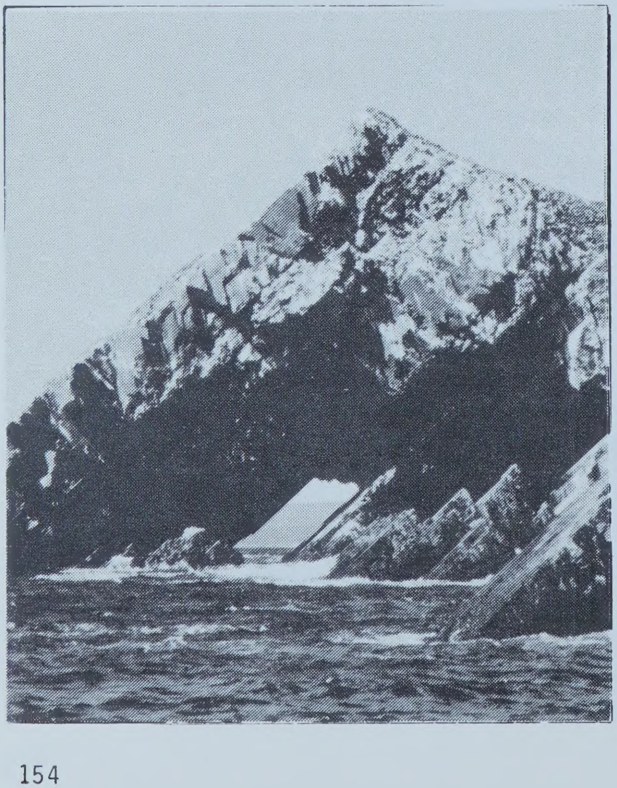
1. publication of a quarterly journal/newsletter.
2. supporting establishment of protected areas for native plants.
3. assessing and monitoring rare plant populations.
4. production of special publications related to flora and vegetation of various localities and rare and endangered species.
5. information exchange with other native plant societies in North America.
6. designation of "research and conservation representatives" for each of the natural regions of Alberta, to pursue research and conservation action in each natural region.
7. formulating rare plant legislation and suggesting revisions to existing provincial statutes which are applicable to native plant conservation and preservation.
8. working with landowners to achieve native plant protection goals.

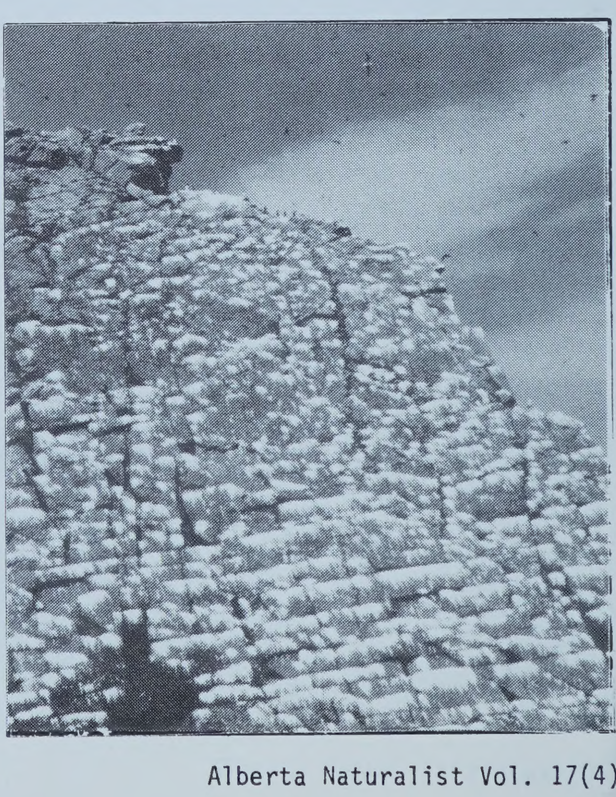
As a step toward some of these goals, the Council will be sponsoring a workshop on "Rare Plants in Alberta" at the Northern Forestry Centre, 5320 - 122 Street, Edmonton, on Saturday, February 13, 1988. Further information on the workshop can be obtained from the Alberta Native Plant Council, Box 4524, Postal Station South Edmonton, Edmonton, Alberta T6E 5G4.

Author's Address:
Northern Forestry Centre, 5320 - 122 Street,
Edmonton, Alberta T6H 3S5.

Flat-topped White Aster (Aster umbellatus). Two rare vascular plant species in Alberta. (Photos: J. Derek Johnson)







A Puffin Called Rosemary

Doris Hopkins

"I'll name my first puffin after you!", I called as we started down the path to the dock. It was a fine June morning in Newfoundland. My husband, Eric, and I were setting out to tour the Witless Bay Seabird Sanctuary with Rosemary and Mike Gatherall's Sanctuary Charter Service. This was to be the climax of a five-week trip which took us from Alberta to Point Pelee in early May to witness the spring migration, then through the Gaspe and the Atlantic Provinces to the fishing village of Bay Bulls near St. John's, Newfoundland. We had seen many of the birds of eastern Canada along the way, and had delighted in each, but today we were to see puffins, and we were really excited.

We had arrived at the Gatherall's home the previous evening to avail ourselves of the Bed and Breakfast service which they provide. The house, a trim grey and white bungalow, is perched on the rocky shore of Bay Bulls harbour. At the door stood Rosemary, all smiles, welcoming us in her delightful Newfoundlandese brogue. Once inside we met husband Mike, and sons Al and Michael, all part of the Sanctuary Charter team. Within minutes we were sipping tea and discovering mutual friends. The Gatherall's charter service was used during the summer of 1986 for tours of the Witless Bay Seabird Sanctuary by delegates to the Canadian Nature Federation Conference in St. John's.

The evening slipped by with lively conversation, first of seabirds. Mike took great delight in baffling us with Newfie names for some of the birds: Saddlebacks (Greater Black-backed Gulls), Mother Carey's Chickens (Leach's Storm-petrels), etc. Rosemary produced copies of research papers and other publications concerning the Witless Bay Sanctuary and its bird populations. The Gatheralls are fifth and sixth generation Newfoundlanders, firmly attached to "the Rock" and happy to allow their guests a glimpse into their history and culture. We were fascinated to learn that there was an Undersea National Historic Museum just outside the window in the waters of Bay Bulls harbour. It was created to protect the wreck of the H.M.S. Sapphire, a British frigate sunk by French action in the eighteenth century.

Happily, the morning promised a fair day. Eric and I set off with the two boys after a hearty Newfoundland breakfast. It was still chilly at nine o'clock with some wind and high cloud, but we were warmly dressed. The boat was named the "Talank an Eisc", Gaelic for "Land of the Fish", which is what the Irish called Newfoundland in early times. It cut through the waves in fine style and we made good time. We started seeing strings of seabirds soon after leaving Bay Bulls. I saw "Rosemary Puffin" almost right away, and a great many of her relatives as well! Puffins and murres were everywhere. The closer we got to the Sanctuary islands, the more birds there were until the air was filled as in a spring snowstorm.

Our guide gave us the option of spending part of our time jigging for cod near the cliffs, but we chose instead to go to Green Island, the second of the Sanctuary

Bay Bulls harbour, Newfoundland.

Green Island,
Witless Bay Seabird Sanctuary. (l)
Common Murre nesting cliff. (r)

(Photos: J. Derek Johnson)

islands, where multitudes of murres nested. They lined the parallel cliff bands like so many head-waiters in immaculate dress suits. The top of the island was riddled with petrels' burrows, but they emerge only after dark. We stayed the required 60 m offshore so as not to spook the murres off their nests, but we were able to get marvellous views nonetheless.

Puffins nest mostly on Gull Island, the largest and nearest of the Sanctuary islands, because of the soft grassy areas in which they can burrow. Vast numbers of puffins and murres were fishing off the shore as we sailed by. It was fascinating to see them swim/fly straight out of the water and into the air, bouncing off waves like skipping stones, with beaks full of small fish for their chicks on the rock above. Black-backed and Herring Gulls wheeled and cried above the scene all the while.

All too soon we headed back towards Bay Bulls. We saw an iceberg away off to the north as we closed in on a fishing boat hauling in nets. Only one fish was lifted from the water while we watched, testimony to the decline of the inshore fishery.

We returned to Gatherall's dock at eleven o'clock. The sun had come out and the wind had dropped. Had we delayed our trip for two hours, we would have been able to use the cameras we took along. Such is life.

A delicious lunch was waiting for us on our return -- cod o'grattin. We were all thrilled and excited about our morning's adventure. It was with a touch of sadness that we said our goodbyes, grateful for the glimpse we had, not only of the seabirds, but also of some real Newfoundlanders.

Editor's Note: Another Albertan who thoroughly enjoyed a trip to Newfoundland.

Unusual Behaviour of Northern Flickers

Elizabeth Hall

On 23 August 1987 at about 10:30 a.m. my husband and I were walking in a belt of woodland along the east bank of the Oldman River within the city limits of Lethbridge.

We heard a flicker giving a most unusual call, almost a scream. On looking up, we saw the flicker followed closely by an immature female Sharp-shinned Hawk. As we watched, each bird dived into a nearby tree for a breather. A few moments after the hawk sprang into the air and dived at the flicker, who promptly took off shrieking. The flicker made no attempt to dodge or hide, but flew straight and fast. Again they each dropped into a tree, and again the hawk made the first move. But this time 15 other flickers arrived within a few seconds of each other, and proceeded to fly between the hawk and the first flicker. The moment the hawk chose a tree to rest in, all the flickers settled in nearby trees. The moment the hawk took to the air again, all the flickers did too, flying straight and fast, no jinking or turning, but confusing the hawk by their numbers.

This went on for about 8 - 9 minutes until finally the hawk gave up and flew off across the river. Whereupon the flickers at once dispersed and vanished, except for one - presumably the original bird.

This is a piece of bird behaviour neither of us has seen before, and we would like to hear of anyone else who has seen anything similar.

Author's Address:
2602-6th Avenue South, Lethbridge, Alberta,
T1J 1C7.

Alberta Christmas Bird Counts, 1986

Andrew Slater

This was a record year in every way for Christmas Bird Counts in Alberta. Spurred on by the national introduction of Wildlife '87, the wildlife conservation centennial of Canada, more participants on more counts saw more birds of more species than ever before.

The number of species recorded was exactly 100, the previous highest being 97 species in 1982. Four new species were added to the provincial C.B.C. list: a Double-crested Cormorant at Calgary, a Snow Goose at Medicine Hat, a Savannah Sparrow at Edmonton and a Fox Sparrow at Cardston.

The number of counts increased from the last three years by one to 22. A new count on an 3.2 ha parcel near Drayton Valley is very welcome, as it is one of our major objectives to encourage smaller counts.

In addition, I was very pleased to receive a report from Medicine Hat, which has been contributing to "American Birds" for several years.

Many counts achieved significantly increased participation. Pride of place must go to Edmonton, whose roll of 163 counters and 348 feeder-watchers totally eclipses all previous counts in Alberta and rivals any count held anywhere. Readers of "American Birds" should watch for recognition of this. Edmonton found 51 species, comfortably beating their previous highest of 43. Some spectacular totals of individuals were recorded; with such heavy coverage, the problem of eliminating duplicate sightings must have been very tricky. In conjunction with the Canadian Parks and Wilderness Society, much publicity for the count was generated and a large measure of public interest aroused. Congratulations are due to the organizers for what was obviously a tremendous effort.

Calgary, with a small increase in participants, found no fewer than 65 species in their count circle, shattering their previous record of 59 and retaining the Turner-Halladay trophy. Besides the Cormorant, which over-wintered on the Bow River and was still present in March, they added Red-tailed Hawk and Stellar's Jay to their all-time list.

Having dealt with "the Big Two," I would like to compare each count's species total this year with its average for the previous five years. Several readers have documented that they find this comparison interesting, and of encouragement to the small counts, while I hope that it caters to the competitive element among counters in a positive way. The three most successful counts were:

	Species in 1986	Previous 5 year Average	Improvement as % age
Red Deer	44	28.2	56.0
Snake's Head	48	31.4	52.9
Ft. McMurray	20	14.2	40.8

Red Deer again greatly increased their habitat coverage by tripling the number of participants inside the count circle and drawing on over fifty more from surrounding districts. Have the "Big Two" become "the Big Three"?

Snake's Head nearly tripled their participation too; the mild weather luring out many Calgary birders to join the locals in getting the New Year off to a good start. One party saw three Canada/Domestic Goose hybrids, pale gray in colour, feeding at a farm during the day with four Canadas and spending the nights on the river with them. The farmer reported that the hybrids were the survivors of a brood of seven hatched last year by a mixed pair. The other members of the brood were presumed killed by predators.

Needless to say, both of the above counts added several species to their all-time lists. While Fort McMurray obviously had a very successful day, especially for woodpeckers, their count was most noteworthy for what they just missed! An Ivory Gull was reported southeast of the count area on December 13th, 14th and 17th, while twelve Willow Ptarmigan were seen 25 to 35 km north of it during the count week, as well as a Lesser Scaup and Mallard.

Banff/Canmore added two new species to their all-time list, a Blue Jay in Canmore and a Blue Grouse on Mt. Norquay, while the highlight on the Bow Summit count was a Northern Pygmy Owl. The Fox Sparrow at Cardston was carefully described by Shirley Shaw, who watched it feeding under a tree containing a feeder. In typical fashion, it would jump and scratch on the ground with both feet.

Edson found both Barred and Great Gray Owls, while Horseshoe Canyon continued to expand their list with foothills and forest species. This year's additions were Gray Jay, Boreal Chickadee and Pine Siskin.

Lethbridge broke their previous Alberta record count of Canada Geese, only to have this in turn surpassed by Medicine Hat, whose Canadas were accompanied by a Snow Goose. Ironically, Lethbridge also reported a Snow Goose initially, but amended this record to an albino Canada. Apparently the Medicine Hat bird was authentic, but I have received no written description. The compiler was actually more excited about their other new species, a Mountain Chickadee.

Large areas of open water were present at Wabamun Lake, with most of their 13 species of waterfowl being on the southern side, including a new high of 13 Hooded Mergansers. Mallard and Common Goldeneye were also high. Wembley reported their 6 American Tree Sparrows as being very unusual. At the Wildlife Reserve, Red-Breasted Nuthatches and White-winged Crossbills were at only around two percent of last year's numbers.

Across the province in fact, these two species showed up in "normal" numbers, emphasizing how exceptional last year's high counts were. Northern Goshawk, however, picked up somewhat after two low years and so did Gray Partridge and Ring-necked Pheasant, both of these introduced species being recorded on more counts than ever before. Ruffed Grouse are evidently at the peak of a cycle, having doubled their number from last year. The last years when this species was found in comparable abundance were 1978 and 1979. The only other regularly wintering species in lower numbers was the Pine Grosbeak, at its lowest since 1983.

Largely, no doubt, because of the combination of mild preceding weather and many counters, 32 species reached their highest ever totals and 25 were recorded on more counts than ever before. Foremost among these was the Canada Goose, which nearly quadrupled its previous high due to the counts at Medicine Hat, where large numbers have not been recorded before, and at Lethbridge.

The Blue Jay tripled its previous highest number and was seen on more counts than ever before, while the following were over or close to, twice their previous highest: Rough-legged Hawk, Merlin, Black-billed Magpie, White-breasted Nuthatch, American Tree Sparrow and House Sparrow. Some of the record totals were due to the huge counts in Edmonton, but not all. For instance, the 34 Rough-legged Hawks on the Snake's Head count equaled the previous provincial highest total while Medicine Hat's 44 American Tree Sparrows was more than any previous provincial total.

While the Edmonton count of Bohemian Waxwings was a record for any species, the provincial total for this irruptive visitor was higher in 1978.

In conclusion, I would like to express thanks to Mike Vandyk who co-ordinated the four Lethbridge area counts and to Michael O'Shea who carried out this task in previous years. I would also like to thank all the count compilers, particularly those who returned the standardized response form before the 31st of January and those who provided details of unusual sightings and interesting comments.

Corrections to Alberta Christmas Bird Counts, 1985 - Alberta Naturalist; Vol. 16, No. 4.

The table of species counts should be amended for the following species to read: Green-winged Teal: Banff/Canmore 2, Calgary 4, Total 6. Rough-legged Hawk: Claresholm 1, Edmonton 1, Snake's Head 1, Total 3. Hawk sp.: Cardston 1, Total 1. Stellar's Jay: Banff/Canmore 2, Waterton Lakes 4, Total 6.

Count Dates, Compilers and Participants

Banff/Canmore Dec. 20. Mike McIvor, Box 114, Banff, Alberta TOL OCO. Participants: Gunter Beer, Joe Benge, Carol Black, Heather Dempsey, Lynn Eldridge, Dave Elphinstone, Halle Flygare, Ellen Gasser, Jean and Paul Greig, Reinhold Lang, Chris MacDonald, Diane and Mike McIvor, Eleanor Montour, Harold Mortimer, Nancy Murray, Larry O'Brien, Brian Patton, Mike Potter, Andy Shellian, Joey Shulman, Barry Siegrist, Keith Webb, Cliff White, Jon Whyte, Gerry Wilkie (Bow Valley Naturalists).

Bow Summit Jan. 3. Mike McIvor, Box 114, Banff, Alberta TOL OCO. Participants: Lloyd Lohr, Diane and Mike McIvor, Mike Potter, Gerry Wilkie (Bow Valley Naturalists).

Calgary Dec. 21. Ian R. Halladay, 2103 Crocus Road NW, Calgary, Alberta T2L 0Z7. Participants: Peggy Aikens, Des Allen, Frank Banack, Kathy Bangay, Reid Barclay, John Bargman, Denise Blais, Hattie Boothman, Harvey and Marg Buckmaster, Doug Collister, Mary Coughlin, Eileen Dann, Elizabeth Dawson-Grove, Doreen Dickson, Ross Dickson, Neil Dixon, Morag Dornian, Mary Dumka, John Flood, Olive Gilbert, Barry and Howard Giles, Joyce Goldsmith, Horst Grothman, Michael Hagel, Willis Hall, Jane Harrison, Michael Harrison, Doreen Higgin, Cedric and Robin Hitchon, Andrew and Mavis Holder, Janet Howes, Fred Jacobs, Kate Jones, Olga Karasek, Paul Keogh, Brenda and Ken Kewish, Mike Klazek, Maurice Langpap, Del Lavallee, Mac Love, Jean Matthews, Jean Maudsley, Glenn and Jean McCullough, Joan and Malcolm McDonald, John McFaul, Eileen McLeod, Nannette and Garry McKay, Jean Moore, Barry Murray, Cathy Osborne, Aileen Pelzer, Jamey Podlubney, Jim Posey, Dan and Mike Quinn, Mike Rogers, Gwen Simpson, Andrew and Lorna Slater, John Stuart Smith, Don and Philip Stiles, Bob Storms, Ann Taylor, Merlin Trigg, Suzanne Visser, Allen Wiseley, Ray and Rob Woods, Coleen Yeh, Rick Young.

Cardston Dec. 27. Shirley Shaw, Box 1102, Cardston, Alberta.

Claresholm Dec. 27. Grace Norgard, Box 10, Claresholm, Alberta TOL OTO. Participants: Hazel Hudson, Laurel Neubecker, Ellen Dougan, Shirley Clark, Cara Moser, Helen Mortimer.

Drayton Valley Dec. 27. Helmut Amelang, Box 1591, Drayton Valley, Alberta.

Edmonton Dec. 27. Michael Quinn, 4123 - 122 St. Edmonton, Alberta T6J 1Z1. Jim Lange, 13216 - 128 Ave. Edmonton, Alberta T5L 3H2. Participants: Daphne Abbott, Peter Achuff, David and Kim Allan, Garnet Anthony, Scott Anthony, Connie Arnell, Sam Barry, Peter Barss, Elisabeth Beaubien, Barb and Jim Beck, Pierre Bernier, Matt Besko, Katrina Bettcher, Alex and Liz Bilesky, Barbara and Garry Boos, Robin Bovey, Jim Butler, Donald Bradshaw, Wesley Bredenhof, Wendy Calvert, Katherine Chamberlain, Ethel Coates, Lewis Cocks, Dawne Colwell, Vince Cottrell, Ray Cromie, Pat Crossley, Bruce and Debbie Dancik, Peter Demulder, Loney and Lynne Dickson, Eva Diener, Cherry Dodge, Dave Dodge, Marlene Dodge, Roland and Trudy Dorval, Janet Dubord, Linda Duncan, Dave Ealey, Jan Edmonds, Roger Edwards, Lori Enns, Juli Esselmont, Michael Fabijan, Jim Faragini, Peter Farrington, Brett Finlay, Jane Finlay, Joy Finlay, Rhonda Finlay, Warren Finlay, Jim Flatman, Jette and Robert Fowler, Barb Gaul, Joel Ghitter, Jim Goodwin, Guy Goulet, Rick Goulet, Linda Graf, Jason Grosnick, Sherry Haley, Ron Hammerstedt, Al Hancock, Mark Harvey, Brett Heffernan, Scott Heffernan, Allan Hingston, Cathy Hodge, Geoff Holroyd, Doris and Eric Hopkins, Geoff and Jan Hopkinson, Jean Horn, Norma Ingram, Pat Ishkanion, Lucy Jarrat, Libby John, Blake Johnson, Derek Johnson, Edgar Jones, Stefen Jungkind, Dave Kelly, George Kelly, Pam and Peter Kenny, Alexandra Klimke, Oksana Kotelko, Bob Lane, Mal Landry, Arlene and Brent Larson, Andre Legris, Maurice Legris, Mr. and Mrs. LeRoi, Elaine Letourneau, Marg Lewis, Fran Losie, Chel MacDonald, Amy Martin, Sherry Maslyk, Donna Mason, Kim McBeath, Janet and Ronald McElhaney, Colin McIntyre, John Moor Dave Nadeau, Joan Neiderleitner, Colleen Nelson, Janet Nevett, Lawrence O'Brien, Sandra Opdenkamp, Pat O'Reilly, Mike Otto, Harold Pankratz, Allison Peacock, Bob Reckow, Dianne Reckow, Lynne Reckow, Nancy Reckow, Beryl Richardson, Brian and Nancy Richie, Ed Ridgeway, Rama Riemenshneider, Cy Ross, Ken Schmidt, Alf Scott, George Scotter, Linda Seale, June Seidl, Dana and Ivan Shukster, Andy Skujins, Barbara and Darrell Smith, Guy Swidley, Robert Theberge, Terry Thormin, Kris Urbanczyk, Ian VanDelft, David VanSetters, Eric Wallace, Eric Wieler, Darwin Wiggett, John

Willis, Doug Wilson, Paul Woodard, Pete Wooding, plus 348 at feeders.

Edson Dec. 22. J. P. Marshall, Box 610, Edson, Alberta T0E 0P0. Participants: Don and Marilyn Bright, Kent Delisle, Todd Mahon, Heather Marshall, Wade McDonald, Dean Mushtuk, Gloria Musson, Darren Petersen.

Elk Island Jan. 3. Geoff Holroyd, Canadian Wildlife Service, 2nd Floor, 4999 - 98 Ave., Edmonton, Alberta T6B 2X3. Dave Pick, Parks Canada, Site 4, R.R. 1, Ft. Saskatchewan, Alberta T8L 2N7. Participants: Peter Achuff, Elisabeth Beaubien, Debra Belmonte, Jean Burgess, Gordon Burns, Jim Butler, George Cheeseman, Murray Christman, Jennifer Clark, Vince Cottrell, Ray Cromie, Patricia Crossley, Dave Dodge, Marlene Dodge, Corry Fardin, Jim Faragini, Cam Finlay, Dave Gilbride, Diane Hayley, Linda Hrubizna, Patricia Ishkanian, Stefan Junkind, Jim Lange, Andre Legris, Eloise and Ross MacDonald, Jennifer Mackinnon, Jennie Manson, Donna Marquardt, Gerry McKeating, Michel Montpetit, John Moore, Dave Nadeau, John Newton, Larry O'Brien, Terry Perron, Dave Person, Mike Quinn, Neil Quinn, Bob Reckow, Diane Reckow, Lynne Reckow, Nancy Reckow, Bill Reynolds, Ed Ridgway, June Seidel, Ivan Shukster, Carol Smith, Darrell Smith, Terry Thormin, Ken Walker, Eric Wallace, John Moore, Darwin Wiggett, Jim Yuill (Edmonton Natural History Club and Friends of Elk Island Society).

Erskine Dec. 28. Lloyd Lohr, Box 1414, Stettler, Alberta T0C 2L0. Participants: B. Clarke, V. Hainsworth, V. Hansen, G. and W. Hewlett, M. and R. Kruger, S. Kudras, B. and M. Lohr, L., LA. and MB. Lohr, M. and W. Muhlbach, G. and G. Neill, H. Peterson, B. Smith, B. Smith, K. Strandquist.

Fort McMurray Dec. 21. John R. Gulley, Box 8201, Fort McMurray, Alberta T9H 4J1. Participants: Brad Arner, Hans Boerger, John and Sherry Gulley, Bill Hunter, John Retallack, Terry Van Meer.

Fort Smith Dec. 26. Jacques Saquet, Box 897, Fort Smith, N.W.T. X0E 0P0. Participants: Bill Dolan, Ken and Mary Lynn East, Dan Frandsen, Laura Gauthier, Libby Gunn, Bart Hartop, Christine Hartop, Gail Hartop, Jason Hartop, Don Huisman, Michael Jones, Bob Lewis, David Monchuk, Bob Redhead, Susan and Wayne Starling, Jeff Thompson, Dan Verhalle.

Horseshoe Canyon Dec. 20. R. W. Storms, Apt. 905, 815 - 14 Ave. SW., Calgary, Alberta T2R 0N5. Participants: Stuart Alexander, Reid Barclay, Myrtle Biggs, Ross Dickson, Brad Edwardh, Michael Hagel, Johnathan MacFarlane, Peter MacFarlane, Ruth MacFarlane, Jamey Podlubny, Wayne Smith, Robert Storms, Merrill Wershler, Ray Wershler, Bill Wilson.

Lethbridge Dec. 27. Liz Hall, 2602 - 6 Ave. S., Lethbridge, Alberta T1J 1C7. Participants: Cliff Beck, Kathleen Blair, Berry Blair, Bob Blair, Bill Brown, Rob and Corlaine Gardner, Graeme Greenlee, Liz and Bob Hall, Jacky Hall, Frank and Alice Harper, Morris Lemire, George and Betty Luco, Lyman Matthews, Gordon and Betty Merrick, Michael O'Shea, Doris Rhodes, Alan Roberts, Gordon Ross, Frank and Katharine Russell, A. Russell, Paul and Joyce Wilkinson, Jessica Wilkinson, A. Williams, Dianna Williams, Di Young, Dan Lee, Betty Haig, Lois McKillop, Sheila Petherbridge.

Medicine Hat Dec. 21. Rob Gardner, 580 - 1st St. SE., Medicine Hat, Alberta T1A 8E6.

Red Deer Myrna Pearman, Kerry Wood Nature Centre, #1, 6300 - 45 Ave., Red Deer, Alberta T4N 3M4.

Snake's Head Jan. 3. Doug Collister, 3426 Lane Cresc. SW., Calgary, Alberta T3E 5X2. Participants: Reid Barclay, Eileen Dann, Luke De Wit, Ross Dickson, Olga Droppo, Dave Elphinstone, Ellen Gasser, Louis Guillemette, Michael Hagel, Ferrell Haug, George Hennig, Kate Jones, Gerry Lunn, Jean Maudsley, Joan McDonald, Malcolm McDonald, John McFaul, Kay Morck, Ken Parker, Harold Pinel, Jamey Podlubny, John Riddell, Barbara Sherrington, Peter Sherrington, Gwen Simpson, Andrew Slater, Wayne Smith, Don Stiles, Robert Storms, Suzanne Visser, Merrill Wershler, Cleve Wershler, Ray Wershler, Bill Wilson.

Stettler Dec. 21. Lloyd Lohr, Box 1414, Stettler, Alberta T0C 2L0. Participants: J. Becklund, D. Brownlee, A. and J. Burrell, H. and N. Charles, B. Clarke, F. Dodds, T. Grafe, B. and L. Greenlee, E. Gross, B. and S. Haddow, V. Hainsworth, G. and W. Hewlett, G. Hughes, A. Hyrcyk, A. Johnson, L. Kennedy, D. Kruger, M. Kruger, R. Kruger, E. McCall, G. and G. Neill, H. Peterson, B. Smith, D. Unruh, A. and A. Weiss, P. Wood.

Wabamun Lake Dec. 21. R. Ebel, 18624 - 70 Ave. Edmonton, Alberta T5T 2V8. A. Hingston, 53 Wakefield Blvd, St. Albert, Alberta T8N 3G1. Participants: Dave and Kim Allan, Leslie Baker, Dave Cuthiell, Rainer Ebel, Alan Hingston, Derek Johnson, Stefan Jungkind, Jim Lange, Harold Pankratz, Jack Park, Alf Scott, Duane Sept, Robert Servos, Peter Whitehead.

Waterton Lakes Jan. 3. Mike Vandyk Participants: Doug and Teresa Dolman, Graeme and Patricia Greenlee, Betty Haig, Liz and Bob Hall, Jean Haslam, Janice Jellicoe, Keith McDougall, Lois McKillop, Chantel Onimet, Doris Rhodes, Ken Smith, Fraser Smith, Paul and Joyce Wilkinson, Jessica Wilkinson.

Wembley Dec. 27. Ellen Craig, R.R. #1., Wembley, Alberta T0H 3S0. Participants: Gavin and Ellen Craig, Erin Dahl.

Wildlife Reserve Dec. 27. Jamey Podlubny, 4520 Bulyea Rd. NW., Calgary, Alberta T2L 2H3 Participants: Stuart Alexander, Desmond Allen, Mairi Babey, Kathy Bangay, Reid Barclay, Doug Collister, Eileen Dann, Ross Dickson, Olga Droppo, Frank Hennessey, Dorothy Hill, Clay Hunt, Kate Jones, Hamish Kerfoot, Ed Mah-Lim, Jean Maudsley, Joan McDonald, Malcolm McDonald, Kay Morck, John Riddell, Barbara Sherrington, Ian Sherrington, Mark Sherrington, Peter Sherrington, Wayne Smith, Don Stiles, Philip Stiles, Bob Storms, Merrill Wershler, Ray Wershler, Bill Wilson, Ray Woods.

Author's Address:
152 Oakside Circle S.W., Calgary, Alberta
T2V 4H2.

Christmas Count Coverage and Weather Conditions

Locality	Km by veh.	Km by foot or skis	Hrs. by veh.	Hrs. on foot or skis	Hrs. watching feeders or owling	Temp. max. C°	Temp. min. C°	Windspeed max. kms. per hr.	Windspeed min. kms. per hr.	Snow-depth max. cm.	Snow-depth min. cm.	Sky condition
Banff/Canmore	250	109	14	60.5	17	-3	-11	16	8	25	15	Clear
Bow Summit	93	33	3.5	16.5	0	0	-6	16	0	90	75	Overcast, fine snow
Calgary	672	170	39	107	150	9	5	34	0	12	0	Overcast, clearing
Cardston	100	6	4	4	0	5	0	30	10			
Claresholm	138	1.6	6	2.5	0	8	4	18	9			
Drayton Valley				8								
Edmonton	1146	594	101	307	341	4	-2	0		15	5	Clear
Edson	510	40	12	7	5	5	-9	5	0	40	10	Mostly clear
Elk Island	467	264	58	127	12	-2	-10	8	0	25	8	
Erskine	192	13	8	7		4	-6					Clear, clouding
Fort McMurray	251	20	16	6.5	0	3	-4	35	10	40	10	
Fort Smith	67	64	1.5	28.5	1	1	-6	16	3	55	40	
Horseshoe Canyon	845	85.7	28.5	35.75	0	5	-15	20	0	0		
Lethbridge	245	45	15	19		10	3	70	30			
Medicine Hat	581	92	30	40	14	3	-2			0		
Red Deer	279	127	18.5	92.75	197	6	4			15	0	
Snakes Head	1307	183	57.25	93.25	14	6	-2	24	0	10	0	Partly cloudy
Stettler	217	13	16	6		3	-3					Overcast, clearing
Wabamun Lake	478	37	33.5	13.5	0	3	-2	5	0	20	0	Cloudy, light snow
Waterton Lakes	151	33	7	16		3	0					Overcast, light snow
Wembley	172	0	4	0	6	2	-4	10	0	10	0	
Wildlife Reserve	908	165.6	41	80.75	5	7	-5	40	5	10	0	

	BANFF - CANMORE	BOW SUMMIT	CALGARY	CARDSTON	CLARESHOLM	DRAYTON VALLEY	EDMONTON	EDSON	ELK ISLAND	ERSKINE	FORT McMURRAY	FORT SMITH	HORSESHOE CANYON	LETHBRIDGE	MEDICINE HAT	RED DEER	SNAKE'S HEAD	STETTLER	WABAMUN LAKE	WATERTON LAKES	WEMBLEY	WILDLIFE RESERVE
Pied-Billed Grebe	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Western Grebe	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-
D.- Cr. Cormorant	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Great Blue Heron	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Snow Goose	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-
Canada Goose	-	-	60	-	-	-	-	-	-	-	-	-	-	939	1462	-	4	-	-	-	-	-
Gr.- Winged Teal	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Mallard	341	-	10556	-	-	-	995	-	-	-	-	-	-	1118	521	256	11	-	2326	6	-	1
Northern Pintail	-	-	6	-	-	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Gadwall	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	18	-	-	-
American Wigeon	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5	-	-	-
Canvasback	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-
R.- Necked Duck	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6	-	-	-
Lesser Scaup	-	-	6	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	10	-	-	-
Harlequin Duck	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Common Goldeneye	63	-	508	-	-	-	73	-	-	-	-	-	-	-	272	11	-	-	763	11	-	-
Barrow's Goldeneye	4	-	11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-
Goldeneye Sp.	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bufflehead	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-
Hooded Merganser	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	13	-	-	-
Common Merganser	1	-	32	-	-	-	-	-	-	-	-	-	-	3	1	-	-	-	2	-	-	-
Ruddy Duck	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-
Bald Eagle	1	-	1	-	1	-	-	-	1	-	-	-	-	-	-	2	1	-	2	-	-	-
Northern Harrier	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Cooper's Hawk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-
Northern Goshawk	-	-	1	-	-	1	1	1	4	-	-	-	1	-	-	1	3	-	-	-	2	1
Red-tailed Hawk	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-
Rough-legged Hawk	-	-	1	3	4	-	1	-	-	-	-	-	1	-	-	-	34	-	-	-	-	10
Golden Eagle	-	-	-	-	1	-	-	-	-	-	-	-	1	-	4	-	-	-	-	1	-	-
American Kestrel	-	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Merlin	-	-	5	-	-	-	41	-	-	-	-	-	-	3	2	6	-	-	-	-	-	-
Gyrfalcon	-	-	1	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Prairie Falcon	-	-	3	-	1	-	-	-	-	-	-	-	1	1	2	-	-	-	-	-	-	1
Falcon Sp.	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Gray Partridge	-	-	100	7	10	-	168	-	10	-	-	-	22	40	24	16	-	12	-	-	50	-
R.- N. Pheasant	-	-	6	1	3	-	29	-	-	-	-	-	2	1	42	58	1	2	-	-	6	-
Spruce Grouse	1	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-	1	-	1
Blue Grouse	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Willow Ptarmigan	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-
Ruffed Grouse	2	-	7	-	-	-	13	4	15	2	9	11	-	-	-	10	26	-	8	-	7	25
Sh.- Tailed Grouse	-	-	25	-	11	-	3	-	-	-	-	-	8	-	5	12	-	-	-	-	76	6
American Coot	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-
Killdeer	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	8	-	-	-	-	-
Common Snipe	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	-	-	-	-	-
Rock Dove	-	-	643	23	10	-	3443	11	135	54	-	-	143	198	1016	1008	189	332	35	-	10	35
Great Horned Owl	2	-	12	1	2	-	14	-	5	2	-	3	11	6	4	10	-	4	-	-	2	5
Snowy Owl	-	-	2	-	-	-	6	-	1	-	-	-	1	-	-	6	-	6	-	-	4	-
Northern Pygmy Owl	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	1	-	1
Barred Owl	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-
Great Gray Owl	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	1	-	-	-	-	1
Short-Eared Owl	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-	1	3	-	-	-	1	-
Boreal Owl	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-

N. Saw-Whet Owl	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	1	1	-	-	-	-	-
Belted Kingfisher	2	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-
Downy Woodpecker	6	-	50	-	4	2	138	10	29	5	2	-	3	8	21	96	16	18	16	-	5	11
Hairy Woodpecker	9	-	19	1	1	-	58	16	34	3	5	1	1	3	1	59	16	9	14	1	8	15
Th.- T. Woodpecker	5	-	1	-	-	-	3	2	-	-	1	-	3	-	-	4	6	-	-	-	2	6
Bl.- B. Woodpecker	2	-	-	-	-	-	-	-	-	-	1	-	-	-	-	5	1	-	1	-	-	-
Northern Flicker	2	-	2	-	-	-	15	-	-	-	-	-	-	3	4	-	-	-	-	-	-	1
Pileated Woodpecker	-	-	-	-	-	-	19	-	3	1	2	-	1	-	-	6	9	1	1	-	-	3
Horned Lark	-	-	-	2	6	-	-	-	-	-	-	-	-	2	3	-	-	-	-	-	11	-
Gray Jay	50	1	-	-	-	-	6	72	1	-	25	26	1	-	-	1	103	-	40	7	2	130
Steller's Jay	3	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6	-	-
Blue Jay	1	-	18	1	-	3	999	39	138	24	15	-	5	2	-	225	91	49	106	-	19	36
Clark's Nutcracker	48	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bl.- Billed Magpie	151	-	1153	32	29	2	2940	41	242	90	1	-	286	213	490	375	181	138	127	20	70	157
American Crow	7	-	63	-	-	-	9	-	-	-	-	-	-	2	4	-	-	-	-	2	-	-
Common Raven	169	2	45	-	5	-	2	151	1	-	163	290	2	-	-	7	236	-	20	16	7	217
Bl.- C. Chickadee	89	-	517	8	-	40	4203	79	819	55	70	10	88	80	84	1115	320	141	512	20	75	288
Mountain Chickadee	125	1	1	-	4	-	-	-	-	-	-	-	-	1	2	-	2	-	-	3	-	7
Boreal Chickadee	20	5	22	-	-	-	48	20	8	-	22	29	1	-	-	89	218	-	106	10	-	100
Chickadee Sp.	43	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
R.- Br. Nuthatch	16	-	10	-	-	-	37	3	-	-	2	-	-	4	8	15	5	-	1	2	-	6
Wh.- Br. Nuthatch	15	-	26	-	1	1	117	7	23	5	-	-	1	6	6	55	21	3	13	-	-	8
Brown Creeper	5	-	22	-	-	-	6	-	-	-	-	-	-	-	2	5	11	-	1	-	-	10
American Dipper	20	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	3	-	4
Golden-Cr. Kinglet	20	3	9	-	-	-	10	-	-	-	-	-	14	-	7	1	11	-	-	-	-	8
Ruby-Cr. Kinglet	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-
Townsend's Solitaire	3	-	2	-	-	-	3	-	-	-	-	-	1	-	-	-	1	-	-	-	-	-
American Robin	1	-	9	-	-	-	11	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-
Bohemian Waxwing	-	-	1170	-	-	-	25443	65	-	167	41	-	64	5	54	521	132	305	189	-	35	1
Cedar Waxwing	-	-	-	-	-	-	3	-	-	-	-	-	-	-	-	43	-	-	-	-	-	-
Northern Shrike	1	-	1	-	-	-	7	-	1	2	-	-	1	-	1	3	8	-	3	1	1	5
European Starling	17	-	392	7	16	-	570	39	2	7	15	-	3	97	172	152	1	4	-	-	30	2
Amer. Tree Sparrow	-	-	5	-	-	-	3	-	-	-	-	-	-	2	44	-	28	-	-	-	6	-
Savannah Sparrow	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Fox Sparrow	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Song Sparrow	1	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-
Wh.- Thr. Sparrow	-	-	-	-	-	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dark-Eyed Junco	2	-	15	-	-	-	31	2	-	-	-	-	1	10	1	5	1	-	-	-	-	-
Snow Bunting	23	-	3	1	-	-	21	286	130	20	-	-	1	-	1	52	7	20	5	3	2000	262
Western Meadowlark	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Rusty Blackbird	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Brewer's Blackbird	-	-	1	-	-	-	-	-	-	-	3	-	-	-	4	-	-	-	-	-	-	-
Pine Grosbeak	38	-	27	-	-	3	153	52	36	-	19	56	1	-	1	2	23	-	35	-	40	10
Purple Finch	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-
Red Crossbill	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8	-	16
Wh.- W. Crossbill	12	40	-	-	-	-	4	-	-	-	-	13	-	-	-	-	4	-	14	-	-	14
Common Redpoll	2	-	378	3	4	15	124	-	44	127	2	73	306	22	60	1406	801	-	235	-	1500	1411
Hoary Redpoll	-	-	2	-	-	-	2	-	4	-	-	1	1	-	-	209	2	-	3	-	-	3
Redpoll Sp.	-	-	-	-	-	-	-	158	-	-	-	-	-	-	-	-	-	79	-	-	-	-
Pine Siskin	2	-	2	-	-	-	17	-	-	-	-	10	1	-	-	22	1	-	1	-	-	7
Evening Grosbeak	104	-	23	-	-	12	333	35	172	32	58	20	5	-	-	472	128	6	360	-	35	22
House Sparrow	215	-	1361	81	320	-	7929	123	337	260	46	2	682	1460	1334	863	236	503	107	-	55	297
Species Total	48	8	65	15	19	9	51	24	26	18	20	16	34	26	36	44	48	18	40	19	27	41
Individuals Total	1663	59	17357	172	433	79	48064	1219	2196	858	502	558	1664	4228	5661	7108	2912	1632	5106	122	4059	3145
Observers Total	27	5	82	1	7	1	511	10	78	22	7	20	15	32	34	135	42	34	15	18	3	33

Summary

SPECIES:	TOTAL
Pied-Billed Grebe	1
Western Grebe	1
D.- Cr. Cormorant	1
Great Blue Heron	2
Snow Goose	1
Canada Goose	2465
Gr.- Winged Teal	6
Mallard	16131
Northern Pintail	9
Gadwall	19
American Wigeon	6
Canvasback	1
R.- Necked Duck	8
Lesser Scaup	18
Harlequin Duck	1
Common Goldeneye	1701
Barrow's Goldeneye	16
Goldeneye Sp.	6
Bufflehead	3
Hooded Merganser	14
Common Merganser	39
Ruddy Duck	2
Bald Eagle	9
Northern Harrier	3
Cooper's Hawk	1
Northern Goshawk	16
Red-tailed Hawk	2
Rough-legged Hawk	54
Golden Eagle	7
American Kestrel	3
Merlin	57
Gyrfalcon	2
Prairie Falcon	9
Falcon Sp.	1
Gray Partridge	459
R.- N. Pheasant	151
Spruce Grouse	5
Blue Grouse	1
Willow Ptarmigan	1
Ruffed Grouse	139
Sh.- Tailed Grouse	146
American Coot	1
Killdeer	10
Common Snipe	4
Rock Dove	7285
Great Horned Owl	83
Snowy Owl	26
Northern Pygmy Owl	5
Barred Owl	2
Great Gray Owl	4
Short-Eared Owl	5
Boreal Owl	1
N. Saw-Whet Owl	4
Belted Kingfisher	5
Downy Woodpecker	440
Hairy Woodpecker	274
Th.- T. Woodpecker	33
Bl.- B. Woodpecker	10
Northern Flicker	27
Pileated Woodpecker	46
Horned Lark	24
Gray Jay	465
Steller's Jay	10
Blue Jay	1771
Clark's Nutcracker	48
Bl.- Billed Magpie	6738
American Crow	87
Common Raven	1333
Bl.- C. Chickadee	8613
Mountain Chickadee	146
Boreal Chickadee	698
Chickadee Sp.	48
R.- Br. Nuthatch	109
Wh.- Br. Nuthatch	308
Brown Creeper	62
American Dipper	31
Golden-Cr. Kinglet	83
Ruby-Cr. Kinglet	2
Townsend's Solitaire	10
American Robin	22
Bohemian Waxwing	28192
Cedar Waxwing	46
Northern Shrike	35
Europen Starling	1526
Amer. Tree Sparrow	88
Savannah Sparrow	1
Fox Sparrow	1
Song Sparrow	2
Wh.- Thr. Sparrow	3
Dark-Eyed Junco	68
Snow Bunting	2835
Western Meadowlark	1
Rusty Blackbird	3
Brewer's Blackbird	8
Pine Grosbeak	496
Purple Finch	1
Red Crossbill	24
Wh.- W. Crossbill	101
Common Redpoll	6513
Hoary Redpoll	227
Redpoll Sp.	237
Pine Siskin	63
Evening Grosbeak	1827
House Sparrow	16211

Species Total	100
Individuals Total	108797
Observers Total	1132

F.A.N. NEWS

F.A.N. Spring Meeting

The spring meeting of the Federation of Alberta Naturalists was hosted by the Bow Valley Naturalists in Banff, May 23 - 24.

Several field trips were held in conjunction with the meetings. Bob Smith, a renowned nature photographer led a trip to Wind Valley and Wind Ridge which provided some spectacular mountain scenery and spring blooming wildflowers in the midst of prime elk and bighorn sheep habitat.

Heather Dempsey, a park naturalist who has a thorough knowledge of the natural features and human history of the area, led a field trip to Stoney Squaw Mountain.

An early morning bird walk was led by Mike McIvor. It led along the river bottom and the Cave and Basin interpretive trail within the town site. It was followed by a hearty breakfast topped by fine fellowship.

John Wood who presented the program "The Banff Elk Project" to the CFNS in May led us on a search for some of his radio-collared subjects. This was a real hands-on (or should I say "ears-on") experience with a major wildlife project in progress. We were able to handle the radio collars, look at solar-activated batteries, see how direction finders work and most exciting of all, hear the beeps, as John and his assistant tracked Whacker and Penny, two of the elk in the project. We hiked through one of the wildlife underpasses, examined track information, and the fence that keeps the animals off the highway. A very informative and thought-provoking field trip.

Throughout most of the weekend the sun shone upon us, and the spectacular scenery produced that familiar wonderful Rocky Mountain High! The warmth of the sunshine was rivalled only by the warmth Diane and Mike McIvor radiated, when they shared their love and knowledge of the natural history of their home turf. Add to that the warmth of good fellowship created by meeting like-minded citizens from all over Alberta. Who says it is always chilly in the mountains?

Herta Przeczek

C.N.F. Conference

In June I attended the 16th annual Canadian Nature Federation Conference in Saskatoon. It was sponsored by the Saskatchewan Natural History Society June 4-7.

After a memorable weekend, a memorable week! Jean Gill and I went on a pre-conference field trip to Turtle Mountain Lake. We spent three days hiking or squelching through marsh and slough country viewing and hearing an abundance of birds. We met a variety of birders from coast to coast and thoroughly enjoyed ourselves.

At the conference we attended a wine and cheese party at the Diefenbaker Center. We also attended the Symposium "A Century of Wildlife Conservation in Saskatchewan." Seven excellent speakers pursued such wide-ranging topics as Wildlife Areas, A Century of Land Use, Who Should Pay for Maintaining Canada's Wildlife, and Grasslands Park. Much to our surprise we found all the speakers so informative and interesting that we sat through all the speeches because we were afraid to miss something!

We also went on a field trip which included the Last Mountain Lake Sanctuary Centennial Ceremony where we saw HRH Prince Philip unveil a plaque commemorating the centennial. After the dignitaries left the area we toured the sanctuary. Last Mountain Lake was the first federal bird sanctuary reserved in North America. To tell you about all the interesting features of this special place for wildlife would be an article all by itself. All birders whatever their ilk will share that wonderful feeling of elation and joy when you see a new species and get a chance to observe it close-up and for a prolonged period. We were able to see a Black-necked Stilt and also a Burrowing Owl so close you could see the wind ruffling the feathers.

Our last field trip was to Batoche and Fort Carlton. This was more of a History Tour and proved to be an extremely interesting outing. Fort Carlton has a link with natural history, as a substantial list of plants which appear to have been first collected at or near this area are listed in Flora Boreali Americana by William Jackson Hooker (1829-1840). This book was based on the plants collected by Dr. John Richardson, surgeon and naturalist to the first and second Franklin arctic expeditions 1819-1822 and 1825-1827.

Other field trips and many post-conference trips were offered as well. On one of our field trips we were treated to a real small-town Church Social for lunch and our banquet ended with a dessert crepe filled with Saskatoon berries.

What a week! Royalty, rare birds, friendship, wonderful field trip leaders, knowledge gained, Saskatoon crepes -- such things memories are made of!

Herta Przeczek

Report on World Wildlife Fund Meeting

This was a Conservation Roundtable Meeting and was separate from the RAMSAR conference which was being held in Regina, June 4. Our meeting was chaired by Prince Philip who was a well-briefed, knowledgeable and practical chairman, assisted by Monte Hummel of the World Wildlife Fund.

We started the meeting with a self introduction of all persons around the table which gave those of us with a bad case of nerves a chance to slow down when we saw how others were affected too. The Prince put all at ease and asked for a show of hands of those who were non-governmental representatives. A surprising number of hands were raised upon which he commented favourably.

The designated speakers then led off with their five minute presentations of efforts to date and promises for tomorrow. On the whole it was positive. Canada has a greatly enlarged budget for endangered species and veterinary study. Alberta has ecological reserves, protected and enhanced habitat. Saskatchewan has good protective legislation and a programme for adding more protected land. Manitoba has 23 management areas, 8 ecological reserves, allows no clearing and assists in preserving wetlands. Highlights: Alberta and Saskatchewan are talking about a joint Athabasca Dune Protection Area and a joint Cold Lake Park, while Saskatchewan and Manitoba will continue to co-operate on cross-border species.

After the designated speakers those of us who wished to make brief statements or comments about our activities could do so. I took the opportunity to say FAN had found a niche in being able to provide a forum for Government(s) and non-government agencies to meet, with the example of Endangered Species, Urban Natural Areas, Conservation Strategy, Shorebirds Workshops and the 5 year co-operative project of the Alberta Bird Atlas.

Prince Philip summed up the meeting by saying that co-operation was essential and he stressed that solutions to environmental concerns must be correct; that we must research, consult with others and ACT. When talking about natural areas "all's fair in Conservation."

The Conservation Roundtable meeting was followed by a press conference when the speeches, which you have seen highlighted in other publications, were given to the press. The Press asked about the status of Grasslands, to which question there was no definite answer. Embarassing.

Lunch was on our own which gave us NGO's the opportunity to meet each other (CNF, CPAWS, AWA, Manitoba, Alberta, etc.). Saskatchewan was in the field organizing the Burrowing Owls for their official visit.

The Burrowing Owls were super. Like Swift Foxes they are photogenic. This Regina colony was remarkably tame/tolerant of the 500 odd people who came to see both Royalty and Owls. The recipients of farm gate plaques, given for agreeing to protect the owl's habitat, each received a few personal words and a handshake from Prince Phillip. Judging from everyone's facial expressions it was a happy and memorable occasion. The Owls acted naturally and returned to their burrows as soon as all the visitors moved away.

As at most conferences, the speeches and statements were important and especially so as they were made by senior government ministers speaking to the elected and appointed heads of 20 conservation and environmental groups and organizations. Of equal importance though, was the chance to meet and compare news and views with other groups. For that I found too little time as my attendance was limited to the one day. On the plus side my flight companion was Diane Pachal, representing AWA, so we had a couple of good hours to catch up with what is occurring in the Alberta - B.C. border area.

Pat Clayton

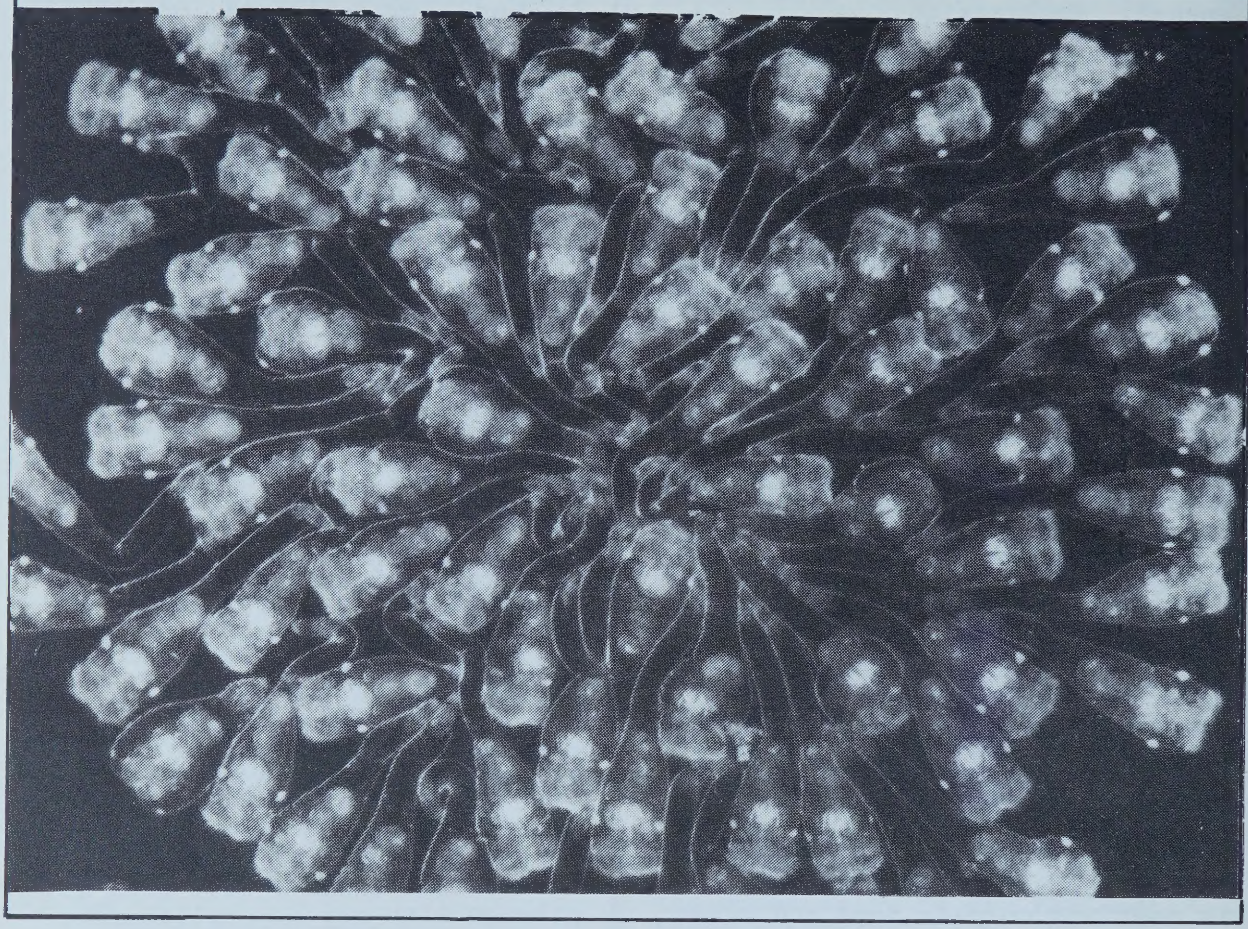
From the Editor

This is my final issue as Editor of the Alberta Naturalist. To say that it has been a challenge would be an understatement. The trials and tribulations we have had to go through to develop and maintain the A.N. in its current format would fill a book. I have often wondered how the final product ever comes out looking the way it does considering all the problems that keep confronting us. Trying to keep a full time Executive Assistant, the loss of grant support, and ever-increasing publication costs have been the biggest challenges to be faced in producing the A.N. Increasingly, we are trying to do more and more of the A.N. "in house", rather than send it out. Not knowing when and if we would have enough material to publish has been the most personally frustrating aspect of being Editor. Response to the A.N. in its current format has in general been highly favorable, so why isn't the membership contributing material to keep it that way? The negative or lack of response to direct approaches for submissions has at times been disheartening. I never really considered myself to be the best person for the job of Editor. Initially, I accepted the job because I thought I would be toiling in virtual anonymity, and if I screwed up no one would really notice. However, not even I thought it would be this anonymous!

On the whole I have been quite pleased with our accomplishments and the A.N. speaks well of the Federation. I certainly could not have done any of this without the considerable help and support of others. I would particularly like to thank the Assistant Editors, Dave Ealey and Dick Dekker, for keeping me going when the situation seemed hopeless; our Executive Assistants over the past four years; Eileen Coffey for keeping the membership list in order; all the contributors; and all those who have participated in our mailout bees.

As of this writing we do not yet have a full time replacement as Editor. However, there is a small group of people that will continue to help with certain aspects of the publication process to keep things going in the interim.

J. Derek Johnson



Rotifers are usually individual and microscopic, but a few are colonial. Colonies 2 or 3 mm in diameter can be seen attached to aquatic plants. Rotifers are named for the rotating action of their cilia which draw in algae, bacteria, and protozoa. In the photograph, the white dots on the side of the head are eyespots. Between the eyespots is the mastax, a chewing organ. Almost all rotifers are female. Males, when they occur, are degenerate and short-lived. Males are unidentified for many species and may not be necessary for reproduction. Reproduction in rotifers is complex, involving different types of females and several different types of eggs. (Photo and caption by Tom Branch.)

NOTES AND NEWS

South Moresby Saviours Honoured

Thom Henley and John Broadhead are joint recipients of the Canadian Nature Federation's 1987 Douglas H. Pimlott Award. The Pimlott Award recognizes individuals who have made an outstanding contribution to Canadian conservation. Henley and Broadhead received the Award at the annual banquet of the Canadian Nature Federation held in Saskatoon, June 6.

The Canadian Nature Federation honoured Henley and Broadhead for their efforts to secure protection for the South Moresby area of the Queen Charlotte Islands. As founding members of the Islands Protection Committee in 1974, they commenced a campaign that attracted millions of supporters and brought national and international attention to the plight of South Moresby. They are co-editors of the best-selling book "Islands at the Edge." With the support of the Canadian Nature Federation, Henley and Broadhead organized the "Save South Moresby Caravan" in 1986. This cross-country trek was the largest demonstration of public support for wilderness conservation in Canadian history.

Henley and Broadhead have also designed and implemented "Rediscovery", a cultural and natural heritage program for youth on the Queen Charlotte Islands, Similar programs have since been established in British Columbia's Stein Valley and in Colorado. Three more sites are planned in British Columbia and another in Hawaii.

CNF President Bob Waldon, who presented the Pimlott Award, commended the dedication of Thom Henley and John Broadhead. "Their commitment as volunteers to protection of the environment has been tireless. The impending creation of a national park reserve in the South Moresby region is largely due to the efforts of these two conservationists," he said.

The Pimlott Award is named in honour of the late Dr. Douglas H. Pimlott, a founding director and former President of the Canadian Nature Federation and a prominent conservationist. The Canadian Nature Federation is the national voice for Canada's naturalists representing 103 affiliated groups and over 200,000 Canadians.

Order of the Bighorn Awards 1987

The Government of Alberta recognized the accomplishments towards wildlife conservation of six Albertans and one Alberta organization on November 18, 1987, by inducting them into the Alberta Order of the Bighorn. This year's recipients, as has been the case for the previous five years that the award has been given, have been instrumental in promoting wildlife conservation in a variety of ways.

Norris Gray of Bonnyville has developed a sanctuary for the care and rehabilitation of orphaned, sick and injured wildlife. Also, through provision of nesting habitat such as bales, and a single pair of captive Canada geese and four goslings, he helped to increase the wild goose population throughout the Bonnyville-Cold Lake area.

Reinhold Eban of Slave Lake has dedicated his life to the conservation of the fish and wildlife resources in Alberta. While engaged in his occupation as an outfitter he has developed an international reputation for his knowledge of big game. He has also promoted Alberta wildlife internationally through a popular book that he wrote in German.

Bryce Chase of Calgary was recognized for an amazing amount of work in fish and wildlife habitat enhancement. Some of the projects included: Gap Lake Enhancement, Wolf Lake Habitat Enhancement, Fish

Creek Trout Habitat Enhancement, Upland Game Bird Habitat Enhancement, and a five year goose nesting program.

The organization recognized was the Brooks and District Fish and Game Association which was recognized for extensive habitat development work on the Brooks Aqueduct Project and fencing of the Antelope Creek Habitat Development Project.

The remaining awards were presented to three people that are well-known to the naturalist community - Joy and Cam Finlay and Kerry Wood. The recognition of these naturalists is encouraging as it demonstrates a broader perception of wildlife is being realized by Alberta Fish and Wildlife.

Kerry Wood, a long-time Red Deer resident and an Honorary Member of F.A.N. was recognized for a life-time of conservation work, teaching, scouting and writing. A fuller accounting of Kerry's accomplishments was presented previously in conjunction with the announcement that Kerry received the 12th Loran L. Goulden Memorial Award (Alberta Naturalist 17(2):55 - 57).

Joy and Cam Finlay have played significant roles in environmental education and natural history writing for Alberta and Canada. Wildlife '87 owes a great deal of its success to these two as catalysts and tireless promoters of the cause of wildlife conservation. Joy is Chairperson of the National Wildlife '87 committee and Cam is Chairperson of the Alberta Wildlife Conservation Centennial Association. Joy's contributions have included: founding president of the Environment and Outdoor Education Council for the Alberta Teachers Association, numerous appointments to various Boards and Task Forces dealing with environmental education, and development of natural history material for use in Alberta schools. Cam's accomplishments have included: first interpretive naturalist at Elk Island National Park, helping to establish the John Janzen Nature Centre in Edmonton, and editing "A Bird Finding Guide to Canada." Together Joy and Cam have written numerous newspaper articles as a nature series, have co-authored "Parks in Alberta" and were among the first promoters of Bluebird Trails in Alberta.

I would encourage naturalists to consider making nominations for subsequent awards. If you know of any deserving individuals who have made real contributions to the cause of wildlife conservation, here is an opportunity to publicly thank them for their efforts. Nomination information can be obtained through Alberta Fish and Wildlife offices.

David M. Ealey

Clifford E. Lee Sanctuary: Can It Coexist With Home Oil?

The Canadian Nature Federation's Clifford E. Lee Nature Sanctuary, located approximately 25 kilometres west of Edmonton, is facing a serious threat. The Alberta government tendered the petroleum and natural gas rights to the property. Home Oil Company, who won the bid, has expressed interest in seismic testing and possible drilling in the area.

The sanctuary's local volunteer Management Committee has strongly opposed any exploration which could compromise the integrity of the refuge. The CNF Board of Directors has given the Management Committeeits full support and negotiations with Home Oil are continuing.

The 121 ha sanctuary is situated in the Devon Sandhills and contains aspen woods, pine woods, meadow and marsh. Over 120 species of birds have been identified here, and the sanctuary is home to a diverse wildlife population.

The sanctuary exists due to the generosity of Clifford E. Lee, a prominent Edmonton businessman and philanthropist.

Nature Canada, Fall 1987.

Ecological Group Recognizes Work of Wagner Society

The Wagner Natural Area Society has received a national award for its management and protection of the Wagner Natural Area, an important wetland complex 6 km west of Edmonton, which it leases from Alberta Forestry, Lands and Wildlife.

The award, from the Canadian Council on Ecological Areas, was presented at a national conference on wetlands/peatlands, held in Edmonton in August.

Wagner Natural Area, which covers 127 ha, is used primarily for educational purposes. More than 100 species of birds have been found there and the site contains many species of orchids.

Forestry, Lands and Wildlife Minister Don Sparrow said he was pleased to see the society recognized for its work. "This proves that government and conservation groups can work together to protect sensitive areas."

Mr. Sparrow urged other groups to become involved in sponsoring a natural area in the province.

The Wagner Natural Area Society is made up of interested individuals and formal representatives from the Edmonton Bird Club, Edmonton Natural History Club, Federation of Alberta Naturalists, Friends of the University of Alberta, Devonian Botanic Gardens and the Parkland Rural Residents' Association.

Forestry, Lands and Wildlife Newsletter, September 1987.

Elizabeth Hall Wetlands

In appreciation of the years of work and leadership by Liz Hall to the Lethbridge community through the Helen Schuler Coulee Centre, the Girl Guide movement, outdoor education activities, and involvement on city council, the Oxbow Lake area of the Lethbridge Nature Reserve has been named the Elizabeth Hall Wetlands.

C.N.F. Awards

Cam Finlay, Chairman of the Alberta Wildlife '87 Committee, Dan McAskill, Chairman of the P.E.I. Wildlife '87 Committee and Lorne Scott in Saskatchewan all received awards for their dedication and efforts to advance the cause of nature conservation in Canada. The awards were presented in Saskatchewan on June 6 at the C.N.F.'s annual banquet.

Recovery Plan Urged to Save Southern Plants

Four plant species in the southwestern corner of Alberta should be considered endangered, says a report on a study of rare plants in the area, and four additional species should be treated as threatened.

According to the "Pilot Rare Plant Monitoring Program in the Oldman Regional Plan Area in Southwestern Alberta," the four endangered plants are the Blue Flag Iris (Iris missouriensis), Mountain Lady's-slipper (Cypripedium montanum), Yellow Paintbrush (Castilleja cusickii) and Wild Onion (Allium geyeri). The report recommends that recovery and monitoring plans be prepared for the first three.

Species considered threatened are Nebraska Sedge (Carex nebraskensis), Sand Goosefoot (Chenopodium subglabrum), Low Milk-vetch (Astragalus lotiflorus) and Clammyweed (Polanisia dodecandra). Further research is needed, says the report, to obtain more information about the threat to other species.

Major threats to plants include conversion of native habitat to non-native species and heavy grazing in certain areas. Forestry operations and the picking of flowers are seen as the greatest potential threats in other areas.

The pilot study, started in 1986, was the first of its kind in Canada. It was funded by the Natural Areas Program, Alberta

Forest Service, and World Wildlife Fund Canada's Wild West project. The study covered fewer than 30 of the more than 360 rare plant species in Alberta. As part of the follow-up to the study, the Alberta Forest Service is now training field staff on how to identify rare plant species for long-term monitoring. Later this summer it will publish the first bulletin on the management and monitoring of the threatened Mountain Lady's-slipper.

Forestry, Lands and Wildlife Newsletter, June 1987.

Wood Bison— An Endangered Species

The wood bison is currently classified as an endangered subspecies of the North American bison. In order to preserve these magnificent animals for future posterity and to maintain a piece of Alberta heritage, the Canadian Wildlife Service, the Dene Tha Band and Alberta Fish and Wildlife are cooperating in the area of wood bison herd management.

A management plan exists whereby the wood bison is to be re-established in its former range near Hay Zama Lakes in northwestern Alberta. It is hoped the eventual size of the wild herd will reach 1000 head. The area to be covered by this plan includes all that territory north of the Chinchaga River, the Keg River Metis Settlement and west of Highway 35 to the B.C. border. Within this area dispersal of wood bison will be tolerated and encouraged; however any bison found immigrating from other areas will be removed.

One of the important participants in the long-term project is the Dene Tha Band whose members were able, through various government grants and agencies, to construct the necessary enclosures and corrals. Since the introduction of the re-establishment plan in 1983, approximately $200,000 has been spent, the majority of which has gone into fencing and corral construction. In addition the Band has assisted with the monitoring and feeding program for the captive bison and will continue to do so.

The method for reintroduction of wood bison involves the use of an enclosure in which the animals are held for at least two years prior to their release to the wild. This holding time serves to precondition animals to the release area since it is believed that the longer the herd is kept captive, the better the chances of increasing its affinity to the chosen area, especially for the adult females that produce calves on site.

The source herd for the program is at Elk Island National Park where Parks Canada has the responsibility of maintaining disease-free bison stock. In February 1984, 29 of this herd were transported and unloaded in the enclosure at Hay-Zama Lake area and are presently being held pending future release to the wild. Seven calves were born in the corral during the spring of 1984 but only four survived the ensuing severe winter.

The best time for release into the wild, based on range condition, would normally be from June to August; however practice dictates a release prior to spring break-up because of the potential of spring flooding and all the attendant problems associated with flood-waters. To date, poor calf survival as a result of recurrent flooding has limited the success of the project.

In order to overcome the problem of flooding, it is proposed to construct two earth-filled pads within the bison paddock area, each pad measuring approximately 30m x 30m and one metre above ground level. The purpose of these pads is to provide bison an area where they can bed down and calve during periods of high water. The estimated cost of these earth-filled pads is $15,000 and the Directors of the

Foundation have authorized the granting of this sum in order that these pads may be built.

The Recreation, Parks and Wildlife Foundation is always anxious to learn and participate in projects which deal specifically with ways to save the endangered species of our land and various articles and stories have appeared in this magazine detailing some of them. The Foundation is pleased to be associated with the wood bison project and the results of the new bedding pads and calve survival rates will be eagerly awaited.

Our Legacy Vol. 6, No. 2, June 1987.

International Wetland Status for Beaverhills Lake

Beaverhills Lake, near Tofield, Alberta, has recently been declared the province's fourth Ramsar Site, a wetland of international importance. The announcement was made at the high-profile Ramsar Convention in Regina, May 27 - June 5, 1987, attended by scientists and politicians of 45 countries, and sponsored by the International Union for the Conservation of Nature (IUCN), Ducks Unlimited, the Canadian Wildlife Service, and the government of Saskatchewan. Prince Philip attended in his capacity as President of World Wildlife Fund International.

Ramsar intends to fight the accelerating loss of wetlands around the world. To date, half or more of our planet's marshes, estuaries and peatlands have been drained, destroyed or heavily polluted.

The first International Wetlands Convention was held in 1971 at Ramsar, Iran. Currently, 45 countries are signatories to the Treaty with over 360 sites committed, totalling 22 million hectares. Canada joined in 1981. With the longest coastline of any nation and over 15% of the planet's fresh water, it is a matter of pride that Canada has designated over 13 million hectares, more than all other countries combined. At present, Canada has 28 Ramsar Sites, of which four are in Alberta, compared to two each in Saskatchewan and Manitoba, and one in B.C.

Alberta's Ramsar Sites are: the Peace-Athabasca Delta, Hay-Zama Lakes, Whooping Crane breeding grounds (with NWT), and Beaverhills Lake.

Named after the range of low hills between Edmonton and Tofield, Beaverhills Lake * is one of the province's largest. Its 20 thousand hectares of shallow water, reedbeds and willow-studded pastures are home to countless ducks, waders and geese. During spring and fall, masses of waterfowl and shorebirds use it as a stop-over on their way to and from the arctic. The lake is a hotspot for birdwatchers and hunters, but its shallow, murky waters are not suitable for boating or fishing. People who know the place tend to agree that this lake is strictly "for the birds."

During the past century, water levels have gone through severe fluctuations, causing problems for surrounding farmers, who have pressured the government for drainage and/or stabilization, which was found to be cost-prohibitive. There were also proposals to use the lake as a RCAF shooting range, or to mine the underlying coal.

Future schemes for development will be subjected to international scrutiny because of the lake's recent gain in status. Ramsar designation is not an attempt to prevent all environmental change or management, and it does not prejudice the sovereign rights of the province of Alberta, but it is a way of ensuring that the potential hazards of development are thoroughly examined through international pressure and concern.

*(Note: It seems a pity that the "s" in Beaverhills has been dropped by cartographers. The original plural version makes more sense to me.)

Dick Dekker

CLUB NEWS

Edmonton Natural History Club

The Club conducted one of its busiest ever summer field trip schedules. The success of these outings was due in no small way to the co-sponsorship of many of them by other groups, including the Edmonton Bird Club, the Beaverhill Bird Observatory, the Beaverhill Nature Centre, the Devonian Botanic Gardens, the Wagner Natural Area Society, the Strathcona Natural History Group, the Clifford E. Lee Sanctuary Society, and the Friends of Elk Island Society. The impetus supplied by the Club's Natural Areas Group provided an excuse for repeated visits to many of the city's creeks and ravines gathering information for a future publication on Edmonton's Natural Areas. A complete list of the field trips is far too lengthy to include here, but some of the highlights were: at least 10 different trips to the Beaverhill Bird Observatory and Beaverhill Lake, including a successful bird-banding workshop in early August; a late May trip through the County of Strathcona with the newly-formed Strathcona Natural History Group; a mid-June trip to southeastern Alberta with the Devonian Botanic Gardens; the annual spring trips to the Kootenay Plains west of Rocky Mountain House, and Sir Winston Churchill Provincial Park near Lac La Biche; the July alpine wildflower trip to Cardinal Divide; the now annual September Great Grebe Tour to Elk Island National Park with the Friends of Elk Island Society; and a season- ending field trip on October 3 to the Wainwright Raptor Breeding Facility.

Indoor meetings, many held jointly with the Canadian Parks and Wilderness Society, began in September with Wayne Roberts from the University of Alberta Zoology Department presenting many little known facts about Alberta's amphibians and reptiles. The October meeting featured a spirited and thought-provoking talk by Dr. Jim Butler exploring the philosophy of national parks. An enlightening presentation on a research project studying the Peregrine Falcons of Rankin Inlet occupied the November meeting.

Meetings continue to be held on the second Tuesday of the month (September to May) at 8:00 p.m. in the auditorium of the Provincial Museum.

J. Derek Johnson

Lethbridge Naturalists' Society

Our fall program got underway with the annual potluck picnic held at the Lethbridge Agriculture Centre picnic site, September 13.

October 16 was the annual general meeting, where officers for the coming year were elected. It was also members' night where members got a chance to show their own slides.

The speaker for the November 13 meeting was Gaylen Armstrong of the Fish and Wildlife Division in Lethbridge, and his topic was the Habitat Retention Program.

The December program included the Lethbridge and Waterton Annual Christmas Bird Counts.

Regular meetings are held on the second Friday of the month, 7:30 P.M., Room 1028, Cousins Building, Lethbridge Community College, 3000-College Drive South, Lethbridge, Alberta.

Graeme Greenlee

ANNOUNCEMENTS

The City of Medicine Hat, Community Services Division, has recently published a checklist of the Birds of Medicine Hat. Information on activities and events relating to the prairie environment in the area is available from the Police Point Interpretive Centre in Medicine Hat (529-6225).

To cover an omission made in the last issue, the A.N. is no longer being printed by Europe Offset Ltd., but is being done at the Percy Page Centre for Recreation Associations.

For those of you who do not read the inside front cover of the A.N. for whom to send your results to, we have not forgotten about the May Bird Count. Andre Legris has agreed to do the compilation for the 1987 count. Please send your May Bird Count results to him at 14639 - 89th Avenue, Edmonton, Alberta, T5R 4P4.

Bird watchers, bird lovers, ornithologists, and natural history enthusiasts ... The Birding Book Society, a unique special interest book club, is now under new ownership and is managed by Pathway Book Clubs.

If you enjoy keeping up-to-date and well-informed on the latest publications available from publishers in the U.S. and around the world, and would like to build up a comprehensive library of birding books, please write for membership information to: Mike A. Tucker, President, Birding Book Society, 382 Main Street, P.O. Box 1999, Salem, New Hampshire, U.S.A. 03079

A BIBLIOGRAPHY OF ALBERTA MAMMALOGY, by David M. Ealey. Natural History Occasional Paper No. 8, 1987. Provincial Museum of Alberta.

This bibliography lists 3,791 references from unpublished and published reports, articles and books relating to the mammalogy of Alberta, up to and including 1985.

Copies of the bibliography may be obtained from the Historical Resources Division of Alberta Culture.

COSTA RICA

FEBRUARY 12 - 23, 1988

Nearly 800 species of birds.

More than 630 are resident.

Approximately 2000 varieties of orchids.

Your chance to see the long-tailed silky flycatcher, emerald toucanet, violet sabrewing, fiery-throated hummingbird, scarlet macaw, blue dancis, resplendent quetzel, blue-crowned chlorophonia and hundreds more — all in the company of a professional guide.

Truly a Naturalists Paradise.

EXTENSIONS AVAILABLE — LIMITED SPACE.

For more information WRITE or PHONE.

China Panda Tours
No. 6, 1470 Water Street
Kelowna, B.C. V1Y 1J5
(604) 763-0400 or
762-3594

FINAL REPORT

of the National Task Force on Environment and Economy

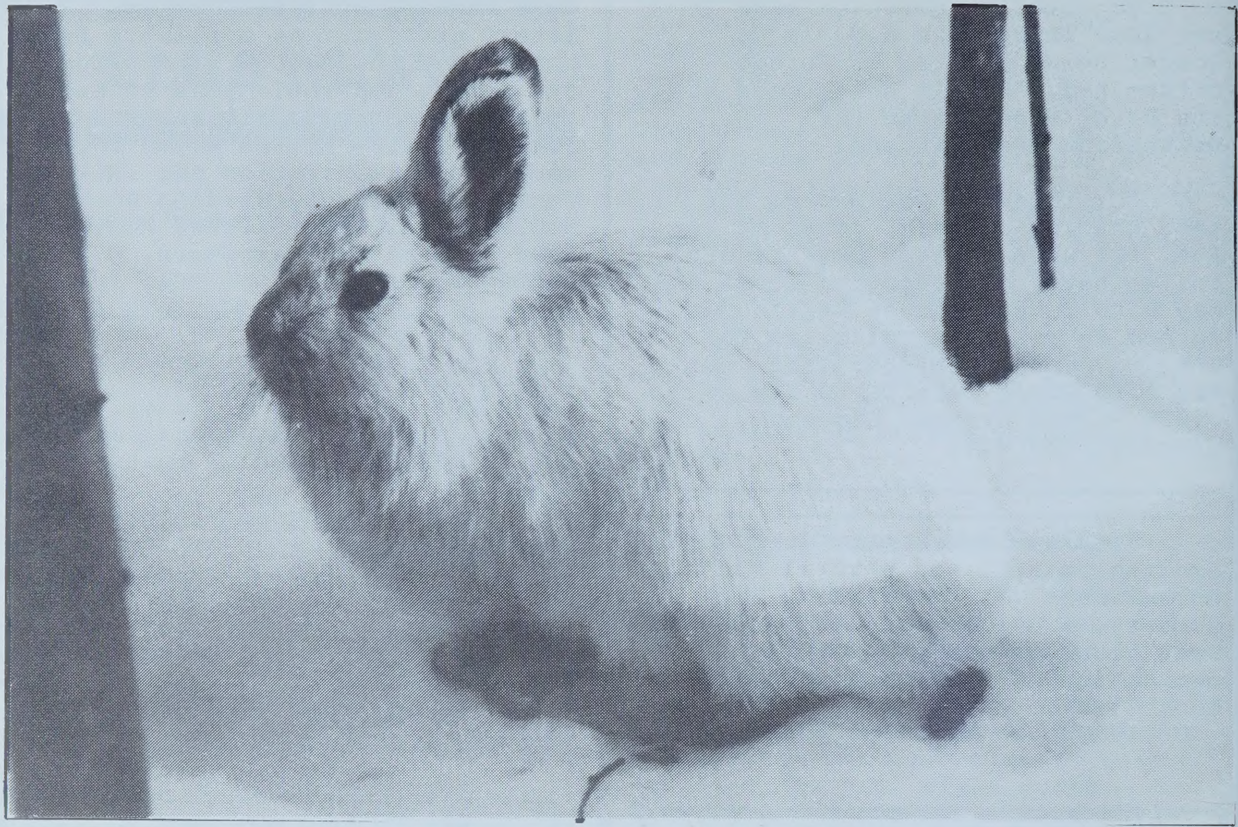
A new and much-needed focus for debate on how to safeguard our future. The Task Force's recommendations are intended to help integrate economic and environmental decision-making. Environment Minister Ken Kowalski is requesting feedback on this report.

Available without charge from:

Environment Council of Alberta
8th Floor Weber Centre
5555 Calgary Trail
Edmonton T6H 5P9
Ph. 427-5792 or
Zenith 06075 (toll-free)

Minister's Office
Alberta Environment
Ph. 427-2391

NATIONAL TASK FORCE ON ENVIRONMENT & ECONOMY/GROUPE DE TRAVAIL NATIONAL SUR L'ENVIRONNEMENT ET L'ÉCONOMIE



Snowshoe Hare. (Photo: Jim R. Salt)

F.A.N. Membership Fees Are: Regular $15 per year; Supporting, $25 or more per year (with excess over $15 being deductible from your taxable income). This entitles you to a subscription to the Alberta Naturalist. Subscriptions to the Alberta Bird Record are $10 per year. If you wish to receive both publications, cost is $23 per year. Please check the appropriate box.

F.A.N. MEMBERSHIP -- Regular Member ☐ For ____ Year
(ALBERTA NATURALIST)
Supporting Member ☐ For ____ Year

ALBERTA BIRD RECORD ☐ For ____ Year

Total Enclosed $________

NAME ________________________________

ADDRESS ________________________________

________________ POSTAL CODE ________________

SEND TO:
FEDERATION OF ALBERTA NATURALISTS
Box 1472, Edmonton, AB T5J 2N5

Recent Publications on Alberta Natural History

Compiled by David M. Ealey and Martin K. McNicholl

Natural History of Alberta

Gadd, B. 1986. Handbook of the Canadian Rockies. Corox Press, Jasper. 876 pp.

Keith, J.A. 1986. Committee on the Status of Endangered Wildlife in Canada. Trans. Fed.-Prov. Wildl. Conf. 50:156-158.

Naturalists

Anonymous. 1985. Awards presented. Sialia 7:153-155 - including Charles and Winnie Ellis; C. Stuart & Mary Houston.

Davis, R. C. 1987. Ernest Thompson Seton (1860-1940). Arctic 40:170-171.

Dodge, D. 1987. The little nature centre that grew. Nature Canada 16(3):11-13.

Hum, S. 1987. Photography through a spotting scope. Pica 7(3):31-33.

Murray, S. 1987. Kerry Wood: Recipient of the 12th Loran L. Goulden Memorial Award. Alta. Nat. 17(2):55-57.

Ouellet, H. 1987. Profile of a pioneer: P. A Taverner. Amer. Birds 41:156-159.

Peck, D. 1986. Castle Meadow natural history camp, 1986. Discovery 15:148-150. -Banff National Park.

Pierce, F.J. 1986. Ernest Thompson Seton, naturalist, artist and author. AB Bookman's Weekly 77:2559-2565.

Richardson, W.J. 1987. In memoriam: William Walker Hamilton Gunn, 1913-1984. Auk 104:318-319.

Zelt., W. 1987. Strathcona Natural History Group. Edmonton Nat. 15(1):14-15.

Soils

Fitter, A.H. and W.F.J. Parsons. 1987. Changes in phosphorus and nitrogen availability on recessional moraines of the Athabasca Glacier, Alberta. Can. J. Bot. 65(1):210-213.

Kaneda, T. 1986. Seasonal population changes and characterization of ice nucleating bacteria in farm fields in central Alberta. Appl. Environ. Microbiol. 52(1):173-178.

Kercvy, R.M.N. 1986. Effect of fertilizer form, method and timing of application on barley yield and N uptake under dryland conditions in southern Alberta. Can. J. Soil Sci. 66(4):615-622.

Pennock, D.J. and W.J. Vreeken. 1986. Influence of site topography on paleosol formation in the Highwood River Basin, southern Alberta. Can. J. Soil Sci. 66(4):673-688.

Pennock, D.J. and W.J. Vreeken. 1986. Soil geomorphic evolution of a boreal catena in southwestern Alberta. Soil Sci. Soc. Amer. J. 50(6):1520-1526.

Stark, M. 1987. Soil erosion out of control in southern Alberta. Can. Geogr. 107(3):16-25.

Strong, W.L. and G.H. LaRoi. 1985. Root density - soil relationships in selected boreal forests of central Alberta, Canada. For. Ecol. Manage. 12:233-251.

Water

Joseph, H.C. and E.D. Ongley, 1986. Role of suspended sediment in irrigation return flow chemistry, southern Alberta. Water Resources Res. 22(5):643-654.

Phillips, F.M., H.W. Bentley, S.N. Davis, D. Elmore, and G.B. Swanick, 1986. Chlorine-36 dating of very old groundwater. 2. Milk River Aquifer, Alberta Canada. Water Resour. Res. 22(13):2003-2016.

Climate

Angle, R.P. and H.S. Sandhu. 1986. Rural ozone concentrations in Alberta. Atmos. Environ, 20(6):1221-1228.

Bertram, H.L., N.C. Das, and Y.K. Lau. 1986. Precipitation chemistry measurement in Alta. Water Air Soil Pollut. 30(1-2):231-238.

Non-vascular Plants

Currah, R. 1986. A new species of Ascodesmus from Alberta. Mycologia 78(2):198-201.

Vascular Plants

Hiruki, C. 1986. Incidence and geographic distribution of sweet clover necrotic mosaic virus in Alberta. Plant Dis. 70(12):1129-1131.

Willms, W.D., S. Smoliak, and A.W. Bailey. 1986. Herbage production following litter removal on Alberta native grasslands. J. Range. Manage. 39(6):536-539.

Trees

DeWit, L. 1987. The mechanism of early spring flowering in willows. Pica 7(2):21-23.

Looman, J. 1987. Mature forest ecology. Pica 7(3):14-18.

Perry, D.J. and B.P. Dancik. 1986. Mating system dynamics of lodgepole pine in Alberta, Canada. Silvae Genetica 35(5-6):190-194.

Invertebrates

Anderson, J.R. and J.A. Shemanchuk. 1987. The biology of *Simulium arcticum* Malloch in Alberta. Part I. Obligate anautogamy in *S. arcticum* and other black flies (Diptera: Simuliidae). Can. Ent. 119(1):21-27.

Lee, D.A. and J.R. Spence. 1986. Phenology of the European corn borer (*Ostrinia nubilalis*) in Alberta. Can. Ent. 118(10):943-956.

Proctor, H. 1987. Sponges and bryozoans. Pica 7(3):7-13.

Spence, J.R. 1986. Interactions between the scelionid egg parasitoid *Tiphodytes gerriphagus* (Hymenoptera) and its gerrid hosts (Heteroptera) Can. J. Zool. 64:2728-2738.

Stoyke, G. 1987. Dragonflies of the DeVonian Botanic Garden. Alta Nat. 17(2):49-54.

Struble, D.L., J.R. Byers, D.G.R. McLeod and G.L. Ayre. 1987. Sex pheromone components of an Alberta population of European cornborer, *Ostrinia nubilalis* (Hbn)(Lepidoptera:Pyralidae). Can. Ent. 119(3):291-299.

Szabo, T. 1986. The modified Alberta nucleus hive. Am. Bee J. 126(8):552-555.

Timms, B.V., U.T. Hammer and J.W. Sheard. 1986. A study of benthic communities in some saline lakes in Saskatchewan and Alberta, Canada. Int. Revue der Gesamten Hydrobiologie. 71(6):759-778.

Parasites

Anderson, J.R. and J.A. Shemanchuk. 1987. The biology of *Simulium arcticum* Malloch in Alberta. Part II. Seasonal parity structure and mermithid parasitism of populations attacking cattle and flying over the Athabasca River. Can. Ent. 119(1):29-44.

Kennedy, M.J. and R.A. Kralka. 1986. A survey of ectoparasites on cattle in central Alberta, November 1984 - July 1985. Can. Vet. J. 27(11):459-460.

Kennedy, M.J. and R.A. Kralka. 1987. A survey of *Eimeria* spp. in cattle in central Alberta. Can Vet. J. 28(3):124-125.

Fishes

Craig, J.F. and K. Smiley. 1986. Walleye, *Stizostedion vitreum* and northern pike, *Esox lucius*, populations in three Alberta lakes. J. Fish. Biol. 29:67-85.

Nelson, J.S. and M.A. Harris. 1987. Morphological characteristics of an introduced Threespine Stickleback, *Gasterosteus aculeatus*, from Hasse Lake, Alberta: A first occurrence in the interior plains of North America. Env. Biol. Fishes. 18(3):173-181.

Birds

Anonymous. 1986. Status of waterfowl, June 1986. Trans. Fed.-Prov. Wildl. Conf. 50:151-155.

Aylesworth, A. 1984. Large box openings can be curse or blessing. Sialia 6:123-124 -includes experience of Duncan Mackintosh with nest boxes in Lethbridge area.

Balph, M.H. 1986. Significant recoveries. North Amer. Bird Bander 11:145-150. -Including Rough-legged Hawk banded as nestling in Alaska in 1981, found dead at Spirit River, Alberta. 1984.

Balph, M.H. 1987. Significant encounters with marked birds. North Amer. Bird Bander 12:72-75. - Including Swainson's Hawk banded in Alberta, recovered in Argentina; Florida recovery of Alta. banded Peregrine Falcon; Edmonton recovery of Cooking Lake banded Tree Swallow; and return of Black-capped Chickadee to Wetaskiwin at least 8 years old.

Bennett, G. 1987. Winter birding across Canada. Birdfinding in Canada 7(3):8-14.

Bennett, G. 1987. Aliens, rarities, stragglers & strays. Birdfinding in Canada 7(3):6-7.

Bennett, G. 1987. Winter birding across Canada. Birdfinding in Canada 7(4):4-5.

Bennett, G. 1987. Great Canadian round-up - spring brand. Birdfinding in Canada 7(4):7-14.

Bennett, G. 1987. Aliens, rarities, stragglers & strays. Birdfinding in Canada 7(4):24-26.

Bennett, G. 1987. Aliens, rarities, stragglers & strays.Birdfinding in Canada 7(5):11-12.

Biermann, G.C., W.B. McGillivray and K.E. Nordin. 1987. The effect of cowbird parasitism on Brewer's Sparrow productivity in Alberta. J. Field Ornithol. 58:350-354.

Davies, L. 1987. Welcome back, Peregrines. Can. Geogr. 107(3):66-73.

Dekker, D. 1987. Peregrine Falcon predation on ducks in Alberta and British Columbia. J. Wildl. Manage 51(1):156-159.

DeWit, L. 1987. A one-legged Gray Jay. Pica 7(2):28.

Dickinson, T.E. and M.R. Lein 1987. Territory dynamics and patterns of female recruitment in Red-winged Blackbirds (*Agelaius phoneniceus*). Can. J. Zool. 65:465-471.

Dickson, R. 1987. 1987 May bird species count. Pica 7(3):18-22.

Duncan, D.C. 1987. Nesting of Northern Pintails in Alberta; laying date, clutch size and renesting. Can. J. Zool. 65:234-246.

Duncan, D.C. 1987. Variation and heritability in egg size of the Northern Pintail. Can. J. Zool. 65:992-996.

Dunn, E.H. and C.D. MacInnes. 1987. Geographic variation in clutch size and body size of Canada Geese. J. Field Ornithol. 58:355-371.

Dupree, D.C. 1987. 1986 Nesting box report. Sialia 9:51-55.

Dupree, D.C. 1986. 1985 Nesting box report. Sialia 8:53-56.

Dupree, D.C. 1985. 1984 Nesting box report. Sialia 7:51-54.

Dupree, D.C. 1984. 1983 Nesting box report. Sialia 6:51-53.

Ebel, G.R.A. 1986. Beaverhill Bird Observatory annual report 1984. Edmonton Bird Club. Edmonton. 22pp.

Gammell, A., R. Gammell and J. Beset. 1986. Seasonal movements of Red-winged Blackbirds banded near Kenmare, North Dakota. Prairie Nat. 18:123-127. -including recoveries at Morinville and Penhold, Alta.

Gilliland, M.D. 1987. "New" species for prairie birders. Blue Jay 45:22-25.

Halladay, I.R. 1987. Calgary Christmas Bird Count 1986. Pica 7(2):18-20.

Harris, W.C. 1987. The autumn migration. August 1 - Nov. 30, 1986 Prairie provinces region. Amer. Birds 41:104-106.

Hingston, A. 1987. Wabamun Lake Christmas Bird Count. Edmonton Nat. 15(1):9.

Hochachka, W.M. and D.A. Boag. 1987. Food shortage for breeding Black-billed Magpies (Pica pica): an experiment using supplemented food. Can. J. Zool. 65:1270-1274.

Holroyd, G. 1987. Elk Island Christmas Bird Count. Edmonton Nat. 15(1):9-10.

Holroyd, G. (ed.) 1987. Beaverhill Bird Observatory 1985 Annual Report. Edmonton Nat. 15(2):5-11.

Holroyd, G.L. and W.M. Holroyd. 1987. Black Swift nests at Maligne Canyon, Jasper National Park. Alta. Nat. 17(2):46-47.

Houston, M.I. 1987. 45th Annual Christmas bird count - 1986. Blue Jay 45:4-19. -including Grand Centre, Alta. - Pierceland, Sask.

James, P.C., A.R. Smith, L.W. Oliphant and L.G. Warkentin. 1987. Northward expansion of the wintering range of Richardson's Merlin. J. Field Ornithol. 58:112-117.

Jehl, J.R., Jr. 1987. Geographic variation and evolution in the California Gull (Larus californicus) Auk 104:421-428.

Kaminski, R.M. and E.A. Glusing. 1987. Density- and habitat-related recruitment in Mallards. J. Wildl. Manage. 51:141-148.

Keppie, D.M. 1987. Do some female Spruce Grouse not breed? Can. J. Zool. 65:211-213.

Koonz, W.H. 1987. Canada, west. Eyas 10(1):26-28.

Lunn, G. 1985. Birding pothole country, Miquelon Lake Provincial Park. Birding Around Edmonton Series, Booklet No. 16. Edmonton Bird Club, Edmonton. 16 pp.

Morck, K. 1987. Two Mountain Bluebird females dueling. Pica 7(2):24-25.

Morrison, R.I.G. and J.P. Myers. 1987. Wader migration systems in the New World. Wader Study Group Bull. 49, (suppl.):57-69.

Myers, J.P., P.D. McLain, R.I.G. Morrison, P.Z. Antas, P. Canevari, B.A. Harrington, T.E. Lovejoy, V. Pulldo, M. Sallaberry and S.E. Senner. 1987. The Western Hemisphere Shorebird Reserves Network. Wader Study Group Bull. 49, Suppl.:122-124.

Pearman, M.D. 1985. The Verdigris Coulee story. Sialia 7:140-141. - Mountain Bluebirds.

Proudfoot, S. and L. Proudfoot. 1985. Birding in Clifford E. Lee Sanctuary. Birding Around Edmonton Series, No. 15. Edmonton Bird Club, Edmonton. 6 pp.

Quinn, M. 1987. Christmas bird count largest in North America. Edmonton Nat. 15(1):7-8.

Reebs, S.G. 1985. Ecological aspects of sleep in Black-billed Magpies. M.Sc. Thesis, Univ. Alberta, Edmonton. 86 pp.

Rising, J.D. 1987. Geographic variation of sexual dimorphism in size of Savannah Sparrow (Passerculus sandwichensis): a test of hypotheses. Evolution 41:514-524.

Saunders, M. 1987. Breeding biology of the Northern Harrier. Pica 7(2):15-17.

Shantz, B.R. and M.D. Pearman. 1984. Nest boxes for Alberta birds. Ellis Bird Farm Ltd., Red Deer. 40 pp.

Smith, W.W., D.M. Collister, H.W. Pinel, C.R. Wershler and R.M. Wershler. 1986. Check-list of the birds of the Calgary region. Fifth ed., Calgary Field Naturalists, Calgary.

Stock, T.M. and J.C. Holmes. 1987. Host specificity and exchange of intestinal helminths among four species of grebes (Podicipedidae). Can. J. Zool. 65:669-676.

Walton, C. 1987. "Hollering blue murder." Nature Canada 16(3):22-29. - On bluebirds.

Wendt, J.S. 1985. Population dynamics of ducks in Canada: the ratio of immatures

to adults. Ph.D. Thesis, Carleton University, Ottawa.

Wershler, R. 1987. Fall 1986 highlights. Alta. Bird Record 5:1-30.

Wilde, G.A. 1987. Unusual nesting site for Bank Swallows. Blue Jay 45:112.

Wiseley, A.N. and H. Pinel. 1987. Occurrence, distribution and plumages of Gyrfalcons in the Calgary region. Alta. Nat. 17(2):37-45.

Wood, K. 1987. Owl predation on flying squirrels. Pica 7(2):27.

Mammals

Anderson, P.K. 1986. Foraging range in mice and voles: the role of risk. Can. J. Zool. 64:2645-2653.

Bondrup-Nielson, S. 1987. Demography of *Clethrionomys gapperi* in different habitats. Can. J. Zool. 65(2):277-283.

Courtney, R. 1987. Pronghorn habitat use in Alberta. Blue Jay 45:114-117.

De Wit, L. 1987. A conifer-eating Beaver. Pica 7(3):26-28.

Falk, J.W. and J.S. Millar. 1987. Reproduction by female *Zapus princeps* in relation to age, size and body fat. Can. J. Zool. 65:568-571.

Gainer, B. 1986. Buffalo - Wood Buffalo Park. Can. Vet. J. 27(6):258.

Harris, W.C. 1987. Saskatchewan Christmas Mammals count -1986. Blue Jay 45:44-52. -including Grand Centre, Alberta - Pierceland, Saskatchewan.

Hudson, R.J. and S. Frank. 1987. Foraging ecology of Bison in aspen boreal habitats. J. Range Manage. 40(1):71-75.

Kingscote, B.F. and J.G. Bohac. 1986. Antibodies to bovine bacterial and viral pathogens in Pronghorns in Alberta, 1983. J. Wildl. Dis. 22(4):511-514.

Kingscote, B.F., W.D.G. Yates, and G.B. Tiffin. 1987. Diseases of Wapiti utilizing cattle range in southwestern Alberta. J. Wildl. Dis. 23(1):86-91.

Lynch, W. 1987. The return of the Swift Fox. Can Geogr. 197(4):28-33.

Prior, M. 1987. An unusual legacy -- Calgary's black squirrels. Pica 7(3):35-36.

Pybus, M. 1987. Don't be afraid to say you like bats! Edmonton Nat. 15(1):17-20.

Rogers, L.L. 1987. Navigation by adult Black Bears. J. Mamm. 68(1):185-188.

Tietje, W.D., B.O. Pelchat and R.L. Ruff. 1986. Cannibalism of denned Black Bears. J. Mamm.67(4):762-766.

Von Frenchell, B. and R.M.R. Barclay. 1987. Bat activity over calm and turbulent water. Can. J. Zool. 65(2):219-222.

Wood, K. 1987. The sundown squirrels. Alta. Nat. 17(2):57.

Xia, Z. and J.S. Millar. 1986. Sex-related dispersion of breeding Deer Mice in the Kananaskis Valley, Alberta. Can.J.Zool.64(4):933-936.

Xia, Z. and J.S. Millar. 1987. Morphological variation in Deer Mice in relation to sex and habitat. Can. J. Zool. 65:527-533.

Parks and Natural Areas

Boyer, D.S. 1987. Waterton-Glacier International Peace Park. Natl. Geogr. 171(6):796-823.

Droppo, O. and H. Pinel. 1987. An annotated list of the vascular plants of Brown-Lowery Recreation Area. Pica 7(2):2-14.

Development/Environmental Problems

Grue, C.E., L.R. DeWeese, P. Mineau, G.A. Swanson, J. R Foster, P.M. Arnold, J.N. Hudkins, P.J.Sheehan, W.K. Marshall and A.P. Ludden. 1986. Potential impacts of agricultural chemicals on waterfowl and other wildlife inhabiting prairies wetlands: an evaluation of research needs and approaches. Trans. North Amer. Wildl. & Nat. Resources Conf. 51:357-383.

Harvey, D.A., M.E. Alexander and B. Janz. 1986. A comparison of fire-weather severity in northern Alberta during the 1980 and 1981 fire seasons. For. Chron. 62(6):507-513.

Johnston, M.A. and S.C. Calp. 1986. Forest land use planning in Alberta. For. Chron. 62(5):470-473.

Keating, M. 1987. Our vanishing wetlands. Can. Geogr. 107(4):42-51.

Macdonald, A.P. and M. Carroll. 1986. An economic analysis of chip utilization in Alberta. For. Chron. 62(4):250-254.

McQuaid-Cook, J. and K.J. Simpson. 1986. Siting a fully integrated waste management facility in Alberta. J. Air Poll. Control Assoc. 36(9):1031-1035.

Myres, M.T. 1987. Estimating the extent of predation by cats on birds in Calgary. Pica 7(3):28-30.

Wildlife Management

Boxall, P.C. and L.C. Smith. 1986. Characteristics of Alberta's hunters 1974-1984. Alta. Fish & Wildl. Div. Res. Econ. Assess. Occas. Paper No. 1 61 pp.

Dekker, D. 1987. Helicopter gunships again? Public outrage halts Alberta's Wolf kill plans - for the moment. Nature Canada 16(4):5-7.

Rosatte, R.C., M.J. Pybus, and J.R. Gunson. 1986. Population reduction as a factor in the control of skunk rabies in Alberta. J. Wildl. Dis. 22(4):459-467.

PER
QH
1
.A33
60,001

CAMROSE LUTHERAN COLLEGE
LIBRARY

AUGUSTANA UNIVERSITY
1 1910 00068935 3